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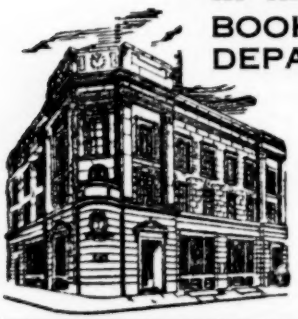

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ADDRESSES AND ORIGINAL ARTICLES

TREATMENT OF PNEUMONIA WITH 2-(*p*-AMINOBENZENESULPHONAMIDO) PYRIDINE (M. & B. 693)

BY A. L. AGRANAT, M.D. Dubl., M.R.C.P.E.
ADDITIONAL ASSISTANT PHYSICIAN, JOHANNESBURG HOSPITAL

A. O. DREOSTI, M.D. Witwatersrand, D.P.H.
SENIOR MEDICAL OFFICER, CENTRAL NATIVE MINE HOSPITAL, CITY DEEP LIMITED, JOHANNESBURG; AND

D. ORDMAN, B.A., M.B. Cape Town, D.P.H.

(*From the Research Division of the South African Institute for Medical Research, Johannesburg*)

AN experiment to evaluate the drug 2-(*p*-aminobenzenesulphonamido) pyridine (M. & B. 693) in the treatment of pneumonia was carried out in Johannesburg during the winter and spring of 1938, among the various population groups in natives and in Europeans. Pneumonia is particularly prevalent in Johannesburg from May to July (winter) and August to October (spring). Through the courtesy of May and Baker Ltd. a supply of the drug was obtained for distribution to the participants in the experiment, which comprised the following:—

Johannesburg Hospital
- (A) Non-European section: native and coloured male and female adults.
- (B) European section: male and female adults.

(C) City Deep Ltd. Central Native Mine Hospital.—Adult male natives engaged in mining work.

(D) Randfontein Estates Ltd. Hospital.—Adult male natives engaged in mining work. The natives on this mine are all fully prophylactically inoculated with vaccine against pneumonia.

(E) Witwatersrand Native Labour Association Ltd. Hospital.—A collecting and distributing depot of natives engaged for work on the Witwatersrand gold-mines.

The cases of pneumonia in each of the above groups have been separately studied. In each group, except (E), there were control and treated series of cases. No selection whatever was made of patients preliminary to their being allocated to control or treated series in each group. Each of the hospitals in the experiment serves a different "variety" of the population, and thus each may be looked upon as a distinct experiment.

The essential differences, from the point of view of pneumonia, between Europeans and natives in Johannesburg are: (1) for various reasons there is a higher incidence in natives than in Europeans, and (2) the bacteriology of pneumonia in natives differs somewhat (Ordman 1938). The reasons why mining and non-mining natives cannot be directly compared in this experiment are: (*a*) the former include only selected adult males of a particular age-group (20–40 years), (*b*) the miners are medically examined and declared physically fit before they are incorporated into the mining population, and (*c*) a proportion of the miners have either recently or previously received vaccine in pneumonia prophylaxis. Another important difference between the Johannesburg Hospital patients (both natives and Europeans) and the patients from the mining populations is that the latter have from the time of their engagement been under constant medical supervision and are admitted as patients to the hospital very soon after the development of the disease; whereas the former do not receive hospital treatment on an average before four days have elapsed after the commencement of their illness.

The total number of patients in the experiment was 550, and it is thus impossible to give individual case-reports in this paper. For each population group, however, a summary has been worked out for the control and treated series, and these summaries are presented in table I and should be referred to for each experiment at the various hospitals. The figures in the table are given in percentages to facilitate comparison.

The cases included in the experiment were only those in which definite clinical signs of lobar consolidation could be detected. In some cases, therefore, the diagnosis was not made until several days after admission, although the disease may have been suspected on account of pyrexia, rapid respiratory rate, the character of the sputum, herpes, and other signs associated with lobar pneumonia. As will be seen later under the separate headings and in table I, X-ray confirmation was not always obtained, but all cases here recorded were, from a clinical point of view, undoubted cases of pneumonia.

In the Johannesburg Hospital with its European and non-European sections the control and treated cases were not under the same physicians, the control cases being allocated to one set of wards and the cases for treatment by M. & B. 693 to another set of wards. On the mines (C) (D), however, control and treated cases were under the same clinical supervision at each mine.

On admission to hospital all cases were provisionally designated as mild (+), moderate (++), or severe (+++). "Mild" cases were those in which the patients, apart from an increase of respiratory rate, did not show much distress, the pulse being relatively good. "Moderate" cases showed greater respiratory distress, with a rapid pulse-rate. "Severe" cases were those in which toxic symptoms were accompanied by restlessness or delirium, a weak and rapid pulse, and marked dyspnœa.

Comments on the treatment of pneumonia in the control and treated cases are given hereunder in the separate groups. Each hospital decided on its own methods and dosage without reference to or collaboration with any other hospital.

In each section below will be found comments on the deaths in the treated series, notes on toxic symptoms associated with the use of the drug, details relating to blood-examinations, and the conclusions come to with regard to the value of the drug.

Pneumonia in the native miners on the Witwatersrand has been reported on previously (Lister and Ordman 1935), and little comment need be made at this stage. The case-mortality rate is fairly constant from year to year, although there is a seasonal variation. The case-mortality rate has been reduced in the series of cases treated with the drug as compared with the controls in the Johannesburg Hospital figures. On the City Deep and on the Randfontein Estates (C) (D) the case-mortality rates are almost as low in the control as in the treated cases; therefore the criterion as to the value of the drug must be based on other factors. But, although judgment of the value of M. & B. 693 cannot be based on the case-mortality rate on these mines, the differences in favour of the drug from the point of view of duration

of pyrexial period and clinical improvement are sufficient to warrant conclusions being drawn.

Johannesburg Hospital

DR. AGRANAT

The investigation into the treatment of pneumonia by means of M. & B. 693 was carried out at the Johannesburg Hospital from the early part of July to about the middle of October, 1938. There are four medical units at this hospital, of which two treated cases with the drug and two acted as controls. Patients were admitted to all services without selection and throughout the period under review.

The physicians responsible for the treatment with M. & B. 693 were the senior physicians, Drs. R. L. Girdwood and L. I. Braun, and the assistant physicians, Drs. J. J. de Waal, A. L. Agranat, and J. B. Baynash. The control cases were under the care of the senior physicians, Prof. W. H. Craib and Dr. A. Bloom, and the assistant physicians, Drs. H. L. Heimann and J. J. Balkin. Access to patients and records made it possible to coördinate the work, and we have pleasure in recording our appreciation for this courtesy. With the kind coöperation of Sir Spencer Lister the laboratory investigations were carried out at the South African Institute for Medical Research.

The diagnosis of pneumonia was based upon a number of the following features: history, blood-stained sputum, physical signs of consolidation, radiography, and in some cases post-mortem evidence. An acute febrile illness with bloodstained sputum without signs of lung consolidation is not an uncommon finding in a native. Unless there was corroborative X-ray evidence or physical signs of pneumonia which developed during the course of illness, such cases were excluded from the series. Patients dying within twenty-four hours of admission were excluded in both the control and treated series.

(A)—NON-EUROPEANS

During the period of investigation 71 cases were treated with the drug and 86 controls were otherwise treated (table I). This small disparity is due to the slightly higher incidence of pneumonia admissions on the intake days of the control wards. The age-groups, tribal distribution, days of illness before admission (3·8 in each series), and lung pathology did not show any wide variations in the treated and control series. The severity of cases on admission was observed and recorded. There were about twice the number of "severe" cases admitted in the treated series as in the control series. About half the number of treated cases were confirmed by radiography (bed-side unit) as compared with about 8 per cent. of the control series.

Administration and effects of the drug.—A few cases earlier in the experiment were treated with 2 half-gramme tablets four-hourly for forty-eight hours, then 2 tablets thrice daily. The rest received the dosage recommended by Evans and Gaisford (1938)—namely, 4 tablets on admission and 2 tablets every four hours for seventy-two hours, followed by 2 tablets thrice daily until the temperature has been normal for three days. The first seventy-two hours' treatment is referred to below as the "intensive" course of treatment. Table I shows that the average number of tablets of M. & B. 693 per case was 58·6 (=29·3 g.).

The temperature became normal within three days in about half the treated cases (fig. 1), as compared with about a quarter of the controls. In a number of cases the temperature fell by crisis or rapid lysis to remain permanently normal, but a secondary pyrexia was fairly common and was considered quite usual.

During the investigation it became apparent that the drug had no effect on serous effusions, empyemas, or unresolved pneumonia. The following cases illustrate this point:—

CASE 7015.—Native male, admitted first day of illness with a left-lower-lobe pneumonia. Intensive M. & B. 693 treatment was begun on the third day. Temperature became normal on the fifth day. On the seventh day a secondary rise occurred which persisted for fifteen days and was ascribed to a serous effusion. The administration of the tablets was continued until the twelfth day after admission (total 70 tablets) with no effect on this secondary pyrexia. After aspiration of straw-coloured fluid, sterile on culture, the temperature returned to normal (fig. 2).

CASE 8332.—A poorly nourished coloured male, admitted on fourth day of illness, with a right-lower-lobe pneumonia, type I. Intensive M. & B. 693 treatment was begun on admission. Temperature reached normal on the third day; then a secondary rise due to an empyema occurred, persisting for twenty days until drained by rib-resection. The drug, continued to the day of operation and amounting to 130 tablets, had no effect on the course of the empyema. Cultivation of the pus yielded a pure growth of pneumococcus.

The average duration of pyrexia in hospital was apparently but little affected by the drug, the figures being 4·8 and 5·6 days for the treated and control series respectively (table I). It may be that the admission of relatively advanced cases of pneumonia explains this point. No essential difference was observed in the mode of termination of the pyrexia (crisis or lysis) in the control and treated series.

The treated and control series showed a stay in hospital of about fourteen days. This may be explained by the fact that the treated cases were in some instances detained for observation during the convalescent period. The hospital records also indicate that a number of cases in the control series refused further hospital treatment and were discharged before convalescence was fully established. Here again the late admission of cases may account for the absence of effect of the drug on the period of total stay in hospital.

In most of the treated cases the leucocytosis accompanying the infection appeared to be practically undisturbed by the drug. A rapid and considerable fall in the count, or a count below 5000, was considered significant. Four of the non-European patients showed a fall in the white-cell count which called for modification of the usual dosage. The following two cases are given as examples:—

CASE 5317.—After 40 tablets had been given the white-cell count was 8700—a drop in three days from 15,200 on admission. Drug was discontinued. Temperature settled.

CASE 7391.—Count not done on admission. Three days later count was 5200, and 26 tablets had been given. Drug discontinued for four days, temperature rose again, and count four days after drug was stopped was 19,000. The drug was again administered, 72 tablets being given during the following twelve days, by which time the cell count had again dropped to 10,200, and the drug was again discontinued. Temperature settled in a few days.

Vomiting and diarrhœa occurred in about 15–20 per cent. of the treated cases. In a number of cases treatment was not discontinued or the dosage lessened on this account, and the patient was able to retain the tablets. In a few cases the treatment had to be interrupted temporarily to overcome this difficulty.

Crushing the tablet and giving it in milk or beef-tea was helpful in some cases. Abdominal pain was sometimes complained of, and relief coincided with withdrawal of the drug. No rashes occurred in the non-European cases. Neither methæmoglobin nor sulphæmoglobin was detected in a number of the cases investigated. A confused mental state was at times encountered, and it was difficult to decide if this was due to the toxæmia of the infection or toxic effect of the drug.

Complications.—In the treated series there were 2 cases of empyema and 3 cases of serous effusion, as compared with no effusions or empyemas but 1 case of lung abscess in the control series.

Case-mortality.—Eight patients who died within twenty-four hours of admission were discarded from the control and treated series. During the period under discussion there were in the non-European section 13 deaths among 21 children of four years and under; these were also excluded from this series, because no patients in the non-European children's ward were treated with M. & B. 693.

It is clear from the table that the treated cases benefited by the drug, for the case-mortality rate was 8·5 per cent. as against a case-mortality rate of 18·6 per cent. in the control series not treated with M. & B. 693.

Fatal cases.—The following 6 cases treated with M. & B. 693 ended in death:—

CASE 5724.—Native male, aged 31, admitted on seventh day of illness with a left-lower-lobe pneumonia, type I. Treatment with M. & B. 693 was begun twenty-four hours after admission, and on the fourth day the chart showed temperature 99° F., pulse-rate 106, and respiration-rate 34. Tablets were discontinued because of vomiting, but owing to a secondary pyrexia were again given from the sixth to the thirteenth day after admission—2 tablets thrice daily. Patient was very toxic, and the condition became worse. He died twenty-one days after onset of illness—i.e., fourteen days in hospital. The white-cell count on admission was 43,000 and before death 45,000.

Post mortem there was a generalised empyema on the left side, with collapse of the left lower lobe, which showed no signs of consolidation. A terminal aspiration bronchopneumonia was noted, with food in the air-passages.

CASE 5859.—Native male, aged 25, admitted with a left-lower-lobe pneumonia, type II. Intensive M. & B. 693 treatment was begun on admission and continued till death. White-cell count on admission 24,500 and on day of death 25,600. Total dose 48 tablets. No post-mortem. (See fig. 3.)

CASE 6336.—Native male, aged 43, admitted with right-upper-lobe pneumonia, type XII. Intensive treatment was given for seventy-two hours, then 2 tablets thrice daily until death. No post-mortem.

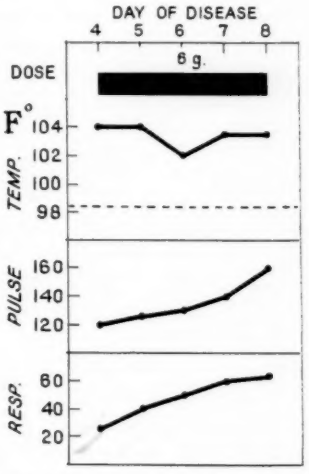


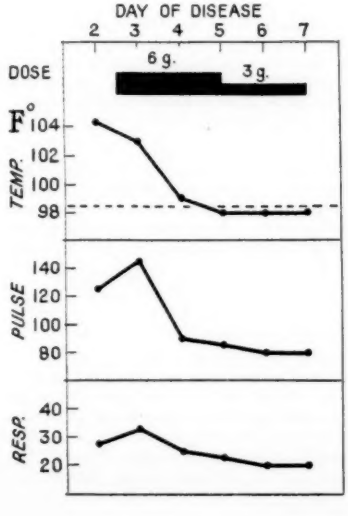
FIG. 3—Chart of fatal case of pneumonia in a native (case 5859) treated with M. & B. 693.

CASE 7020.—Native male, aged 40, admitted eighth day of illness with a left-lower-lobe pneumonia. Intensive treatment was begun four days after admission—i.e., eleventh day of illness. A total of 48 tablets was given. Patient died on ninth day in hospital—i.e., sixteenth day of illness. No post-mortem.

CASE 7828.—Indian female, aged 29, poorly nourished, very ill on admission with right-middle-lobe and left-lower-lobe pneumonia. Pure growth of *Staphylococcus aureus* from sputum. M. & B. 693 treatment was begun twenty-four hours after admission, 24 tablets in all being given. Patient very toxic and delirious. The last few doses of tablets could not be swallowed satisfactorily. Patient died sixty-four hours after admission. No post-mortem.

CASE 8701.—Native male, aged 60, admitted on fourteenth day of illness with a right-lower-lobe pneumonia. Sputum not bloodstained. Temperature 103° F., pulse-rate 120, and respiration-rate 30.

1



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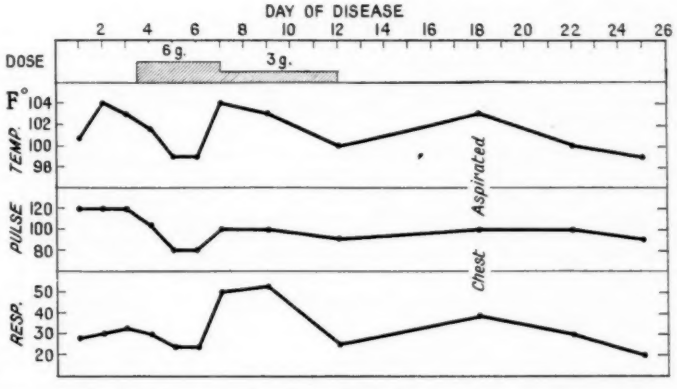


FIG. 1—Typical chart showing effect of M. & B. 693 on temperature, pulse-rate, and respiration-rate.

FIG. 2—Chart of native (case 7015) with serous effusion treated with M. & B. 693.

TABLE I—ANALYSIS OF PNEUMONIA CASES IN CONTROL AND TREATED SERIES OF VARIOUS POPULATION GROUPS

—	City Deep Ltd.		Randfontein Estates Ltd.		Johannesburg Hospital				Witwaters-rand
					Non-Europeans		Europeans		
	Control	Treated	Control	Treated	Control	Treated	Control	Treated	Treated
Cases—									
Males	100	100	57	58	77	62	23	22	24
Females	0	0	0	0	9	9	4	5	0
Total	100	100	57	58	86	71	27	27	24
Total deaths	4	0	1	1	16	6	6	2	1
Case-mortality rate (per cent.)	4·0	Nil	1·7	1·7	18·6	8·5	22·2	7·4	4·2
Age-group in years (per cent.)—									
–20	14·0	14·0	24·8	17·2	20·9	11·3	14·8	11·2	4·2
–30	46·0	39·0	57·9	60·3	48·9	62·0	29·6	22·2	70·8
–40	38·0	42·0	12·3	12·1	22·1	19·7	22·2	29·6	20·8
–50	2·0	5·0	5·3	8·7	5·8	4·2	18·5	14·8	4·2
Over 50	—	—	1·7	1·7	2·3	2·8	14·8	22·2	—
Tribal distribution (per cent.)—									
Shangaan	31·0	38·0	24·6	17·2	9·3	5·6	..	..	12·5
Msutu	14·0	11·0	5·3	1·7	36·0	32·5	..	..	—
Xosa	7·0	8·0	—	—	9·3	9·8	..	..	4·2
Zulu	7·0	6·0	1·7	3·5	26·7	25·4	..	..	—
Buchuana	11·0	10·0	7·0	3·5	—	—	..	..	4·2
Nyambaan	10·0	12·0	24·6	37·9	—	—	..	..	—
Swazi	1·0	2·0	1·7	1·7	2·3	4·2	..	..	—
Mavenda	1·0	2·0	—	—	3·5	4·2	..	..	—
Pondo	4·0	2·0	—	1·7	—	—	..	..	—
Mixed	—	—	—	—	5·8	7·0	..	..	—
Nyasa	—	—	—	—	—	—	..	..	62·5
Blantyre	—	—	10·5	10·3	—	—	..	..	16·6
Mchopi	9·0	8·0	21·1	15·6	—	—	..	..	—
Other	5·0	1·0	3·5	6·9	7·1	11·3	..	..	—
Days of illness before admission (per cent.)—									
0			10·5	6·9	—	—	—	—	
1			50·9	55·2	8·1	9·8	3·7	7·4	
2			29·8	24·2	17·4	23·9	7·4	18·6	
3			7·0	8·6	29·1	18·4	37·0	14·8	
4	Within 2 days (see text)		—	1·7	17·4	16·9	11·2	14·8	Within 2 days (see text)
5			—	—	8·1	8·5	14·8	18·5	
6			1·8	—	7·0	8·5	7·4	7·4	
7			—	1·7	2·3	4·2	—	3·7	
8			—	1·7	4·7	1·4	3·7	7·4	
Over 8			—	—	5·9	8·4	—	7·4	
Average days	..	..	1·4	1·7	3·8	3·8	3·8	4·5	..
Lobes affected (per cent.)—									
Right upper	8·0	4·0	19·3	17·2	9·3	4·2	14·8	—	8·3
Middle	1·0	8·0	3·5	3·5	1·2	1·4	—	—	—
Lower	26·0	24·0	19·3	22·4	41·9	35·2	18·5	25·9	37·5
Two lobes	12·0	11·0	10·5	6·9	2·3	8·5	—	—	4·2
Whole lung	9·0	10·0	3·5	—	3·5	5·6	3·7	7·4	—
Left upper	5·0	2·0	—	1·7	5·8	1·4	3·7	7·4	12·5
Lower	28·0	26·0	35·1	44·8	30·2	28·2	29·6	40·7	33·3
Two lobes	11·0	10·0	3·5	—	2·3	2·8	3·7	11·2	—
Both lungs	—	5·0	5·3	3·5	1·2	8·5	7·5	3·7	4·2
Bronchopneumonia	—	—	—	—	2·3	4·2	18·5	3·7	—
Confirmed by X ray (per cent.)	77·0	85·0	100	100	8·1	45·1	55·6	Nil	Nil

Radiogram suggested atelectasis—"loss of translucency in the right base . . . is too dense for pneumonia . . . some displacement of heart to this side." Intensive M. & B. 693 treatment on admission, total 46 tablets. Patient died on the sixth day after admission—i.e., nineteenth day of illness. No post-mortem.

It is unfortunate that in these 6 cases only 1 post-mortem examination was obtained. Case 5724 died from an empyema, the pneumonia having resolved. Cases 7020 and 8701 were admitted late in the illness; treatment was delayed in case 7020; and the diagnosis of uncomplicated pneumonia in case 8701 is doubtful. Cases 5859 and 6336 appeared to be straightforward pneumonia which failed to respond to the drug.

(B)—EUROPEANS

A number of features discussed under the non-European group apply equally to the European group. Here there were 27 cases treated with M. & B. 693 and 27 controls (table I). The age-groups, physical signs, and severity on admission more or less corresponded in the two series. The treated European cases came in on an average seventeen hours later than the control European cases, which fact may influence some aspects of the M. & B. 693 results. About half the number of treated cases were confirmed by radiography as compared with none in the controls. Of the treated cases 61 per cent. had a normal temperature within three days, as compared with 10 per cent. of the controls. Twice the number of cases terminated by crisis in the treated series compared with the controls. The average stay in hospital of the treated cases was 20·1 days in comparison with 23·8 days in the controls. In the treated series there is therefore a bigger percentage returning to normal within three days, a bigger number ending in crisis, and a somewhat shorter period of stay in hospital.

Toxic manifestations of the drug: agranulocytosis.—The mode of administration and dosage of the drug was similar to that employed in the non-European series. The toxic manifestations were similar, but a macular rash developed in 3 cases. A trace of sulphæmoglobin was found in 1 case (No. 7474). A state of mental confusion was noted in several

TABLE I—(*continued*)

—	City Deep Ltd.		Randfontein Estates Ltd.		Johannesburg Hospital				Witwatersrand
					Non-Europeans		Europeans		
	Control	Treated	Control	Treated	Control	Treated	Control	Treated	Treated
Severity on admission (per cent.)—									
+	38·0	17·0	Not detailed		5·9	2·8	7·4	18·5	12·5
++	60·0	69·0			76·7	64·8	66·7	48·2	79·2
+++	2·0	14·0			17·4	32·4	25·9	33·3	8·3
Days in hospital before M. & B. 693 given (average)	—	0·9	—	0·2	—	0·3	—	0·4	2·2
Days in hospital with pyrexia after administration of M. & B. 693 (per cent.)—									
0	—	—	—	—	—	—	—	—	—
1	—	4·0	—	3·5	1·4	12·3	—	26·1	43·6
2	—	45·0	5·4	40·3	8·6	21·5	—	34·8	21·7
3	7·4	21·0	1·8	43·8	17·1	18·5	10·0	8·7	17·4
4	8·3	13·0	5·4	5·3	11·4	7·7	25·0	—	13·0
5	11·5	3·0	8·9	—	14·3	10·8	20·0	—	4·3
6	20·8	4·0	16·1	—	15·7	7·7	—	4·4	—
7	10·4	2·0	21·4	—	10·0	7·7	5·0	—	—
8	12·5	3·0	8·9	—	7·2	3·1	5·0	—	—
Over 8	29·1	5·0	32·1	1·8	14·3	5·2	35·0	21·7	—
Apyrexial	—	—	—	5·3	—	1·5	—	4·3	—
Average days	—	3·6	—	2·6	—	4·5	—	5·6	2·1
Total of days in hospital with pyrexia (average)	7·5	4·5	7·8	2·8	5·6	4·8	7·4	6·0	4·3
Termination of pyrexia (per cent.)—									
Crisis	57·3	57·0	46·4	91·2	51·4	56·9	35·0	68·0	65·2
Lysis	42·7	43·0	51·8	3·5	48·6	41·6	65·0	28·0	34·8
Apyrexia	—	—	1·8	5·3	—	1·5	—	4·0	—
Days of stay in hospital (per cent.)—									
−10	2·1	33·3	1·8	3·6	27·2	30·8	9·5	13·7	—
−15	42·7	50·5	19·6	53·6	42·9	49·2	23·8	27·3	17·4
−20	33·3	10·1	21·4	19·6	22·9	3·1	19·0	27·3	17·4
−25	7·3	2·0	17·8	12·5	2·8	7·7	19·0	9·1	4·3
−30	7·3	3·0	14·3	7·1	2·8	3·1	14·4	4·5	39·2
−35	3·1	—	13·5	3·6	1·4	4·6	—	4·5	21·7
−40	1·0	1·1	8·9	—	—	1·5	4·8	9·1	—
Over 40	3·1	—	5·7	—	—	—	9·5	4·5	—
Average days	18·5	12·9	24·0	16·6	14·1	14·6	23·8	20·1	24·4
M. & B. 693 per case (average)—									
Tablets	—	48·7	—	38·0	—	58·6	—	63·1	28·3
Grammes	—	24·3	—	19·0	—	29·3	—	31·6	14·2

European cases, and it was felt that this had some relation to the drug. One case developed complete agranulocytosis, the details being as follows:—

CASE 5529.—This was the first European case treated at the General Hospital, and, although his treatment began a few days before the middle of July, he was included in this series owing to this complication. He was admitted with a right-lower-lobe pneumonia, type III. M. & B. 693 treatment was begun seven days after admission, 2 tablets being given four-hourly for forty-eight hours, then 2 tablets thrice daily for four days—48 tablets in the first course. The white-cell count on the day M. & B. 693 was begun was 7600, and three days later it was 8000. The temperature settled, but a secondary pyrexia occurred two days later, when M. & B. 693 was again administered for another six days, totalling 48 tablets. A count of 16,000 white cells with 50 per cent. of polymorphs was obtained on the last day of the second course of treatment. The total number of tablets given was 96. The temperature settled, and seven days after the drug was stopped a blood-count was done, not because of the occurrence of any symptoms but as a check. The following count was obtained: leucocytes, 3200; neutrophils, 1 per cent; monocytes, 4 per cent.; lymphocytes, 94 per cent.; and eosinophils, 1 per cent.

The patient remained symptomless, but pentose nucleotide was given. Seven days later the count was: leucocytes, 8800; neutrophils, 43·5 per cent. (with a definite shift to the left of the Arneth count); monocytes, 2·5 per cent.; lymphocytes, 52 per cent.; eosinophils, 1 per cent.; and basophils, 1 per cent.

Two tests for sulphæmoglobin and methæmoglobin at an interval of fourteen days were negative. Patient was discharged fit forty days after admission.

Complications.—One case of empyema and 5 cases of serous effusions occurred in the treated cases, whereas in the control series there were 3 cases of empyema, no serous effusions, and 1 case of lung abscess. This lower incidence of empyema in the treated European cases showed a contrast to the higher incidence of empyema in the non-European treated series. In both groups more pleural serous effusions occurred in the treated cases than in the corresponding control series.

Note on two fatal cases.—Two deaths in the European control series were not included in the control deaths for reasons given in the résumé of these cases:—

CASE 6142.—European male, aged 44, admitted as a control case about the third day of illness with a bilateral lobar pneumonia, type I. Three doses of polyvalent antipneumococcal serum (25 c.cm. each) were given daily from the day of admission. The patient's condition became progressively worse, and on the evening of the third day in hospital it was decided to give him some M. & B. 693. Delirium was well marked, and 14 tablets were charted, 2 tablets four-hourly. It is doubtful if the patient was able to swallow the last few doses. He died on the fourth day after admission. Post mortem there was lobar pneumonia involving the left apex and base and the upper and middle lobes of the right lung.

Although admitted as a control case this has been excluded from the control deaths, owing to the fact

that at least some M. & B. 693 was given when the patient was becoming moribund.

CASE 7692.—European male, aged 32, admitted with a right-lower-lobe pneumonia, type VII. Patient also had chronic nephritis, and sixteen days after admission there was a uræmic condition showing a blood-urea of 207 mg. per 100 c.cm. Owing to this complication the case was excluded from the pneumonia control deaths. No post-mortem.

Mortality-rate.—There were 2 deaths in the treated cases and 6 deaths in the controls, each out of a group of 27 cases, with a corresponding mortality-rate of 7·4 per cent. and 22·2 per cent. respectively. This is the most significant aspect in the contrast of these two European series. The following are details of two fatal cases treated with M. & B. 693 :—

CASE 6468.—European male, aged 33, admitted about the third day of illness with right-upper-lobe pneumonia and pneumonic patches at both bases (confirmed radiographically), type I. Intensive treatment was begun on admission. Some improvement was manifested on the fourth-fifth day, followed by a recurrence of temperature. On the seventh day another intensive course of M. & B. 693 was given, followed by 2 tablets thrice daily. White-cell count 20,000–16,000. No methæmoglobin or sulphæmoglobin. Radiogram on relapse of temperature indicated a bilateral basal pneumonia. Total tablets given, 100. Condition became progressively worse, and patient died sixteen days after admission. No post-mortem. M. & B. 693 had apparently no effect on the course of this case.

CASE 8069.—European male, aged 74, admitted on the fourth day of illness with a left-lower-lobe pneumonia, type III. History of three weeks' cough before admission in a critical condition. M. & B. 693 was begun on the day after admission, and a total of 36 tablets was given. Patient died on the fifth day after admission. Post mortem there was basal and apical lobar pneumonia (left), and a healing infarct in the left ventricle.

SUMMARY AND CONCLUSION

The value of M. & B. 693 in the treatment of pneumonia was investigated at the Johannesburg Hospital for a period of about three months. The cases in the control and treated groups were unselected and representative of the local European and non-European population, except children. The drug has in a number of cases produced vomiting and diarrhœa, which though not serious has occasionally interfered with its continuous administration. Sulphæmoglobinæmia and skin eruptions have been rare. Three cases treated with M. & B. 693 showed a considerable fall in the white-cell count, but there was only one case of agranulocytosis, and this patient recovered. The occurrence of empyema differed in the treated series of the European and non-European groups, being lower in the former and higher in the latter than in the corresponding control series.

In the non-European group there were 71 cases treated with M. & B. 693 and 86 controls, and the death-rates were 8·5 per cent. and 18·6 per cent. respectively. In the European group there were 27 cases in each series, and the mortality was 7·4 per cent. in the treated cases and 22·2 per cent. in the controls.

Conclusion.—So far as this series of pneumonia cases goes, M. & B. 693 appears to affect favourably both the course of the disease and the case-mortality rate.

Thanks are due to Dr. A. H. Louw, superintendent of the Johannesburg Hospital, for permission to publish this work carried out at the hospital; to Dr. R. L. Girdwood for his valuable advice in conducting this investigation; to Dr. Mary Gordon for permission to treat the pneumonia cases in her wards; and to Mr. D. Anderson for his assistance with the hospital records.

City Deep Ltd.

DR. DREOSTI

In July, 1938, an investigation was begun into the efficacy of M. & B. 693 in cases of pneumonia with lobar consolidation in native mine labourers in the Central Native Hospital, City Deep, Johannesburg. The experiment herein reported consisted of treating 100 cases of pneumonia with this drug, 100 cases simultaneously treated without the drug serving as controls. The experiment was concluded in the early part of November. When the experiment was begun the only available information about the drug was Whitby's (1938) valuable experimental work on animals. However, soon after the investigation was started the experience of Evans and Gaisford (1938) in the treatment of pneumonia in man became available. Their report of the absence of toxic reactions and the discussion on dosage were of great service at this stage. Although working with different material, it may be stated at once that our results were virtually the same as those they obtained.

The subjects of this investigation were male native mine labourers, mainly in the age-group 20–40, employed, chiefly underground, on the City Deep and Nourse gold-mines in Johannesburg. These natives pass at least two medical examinations for fitness before being accepted for mine work. Natives who have successfully passed these medical examinations are then signed on for a contracted period of work averaging nine months. At the end of the contracted period they return to the native territories for several months or longer, and many then reapply for employment on the mines. A large number of natives, however, on any mine, are in their first period of service. There is, therefore, a continual addition of new, raw, unacclimatised labour to the labour force.

It is a well-known fact that pneumonia is commoner and usually more severe and has a higher mortality in natives recruited for mine work from Portuguese East Africa than in natives from British South Africa. For the purpose of this investigation the tribal factor can be ignored, since the distribution of the cases is virtually the same (see table I). Similarly, the age-distribution is almost the same in both groups. The distribution of lung lesions in both groups is given in the table.

The cases that were not treated personally by me were nevertheless seen by me for confirmation of the diagnosis and for the purpose of assessing the severity and progress of the disease. The diagnosis and observations made may therefore be regarded as reasonably uniform for all the cases included in this report.

On admission all cases were provisionally designated as mild, moderate, or severe. The table shows that the control cases on the whole were less severe on admission than the treated ones. In view of the fact that there is no sick parade on the City Deep and that therefore every native who complains of feeling ill is admitted direct to hospital, it may be assumed that in most cases (both controls and treated cases) the patients were admitted to hospital within a day or two of the onset of the illness.

Effect of drug on the temperature.—In judging the effect of the drug on the course of the temperature

it must be remembered that many of the treated cases were only given the drug after the pyrexia had already been present for two or three days; 41 were treated on the first day of pyrexia, 3 on the second day, 17 on the third day, and 4 on the fourth day. In 10 of the treated cases, after the temperature had been normal for several days and the drug discontinued, a sharp rise in temperature occurred. When the drug was given again the pyrexia subsided rapidly. A similar recurrence of temperature was also observed in 8 of the control cases.

As shown in fig. 4 the cases treated with M. & B. 693 had on the whole a much milder course than had the control cases (see table).

Evans and Gaisford (1938) record that in cases treated with M. & B. 693 the rapid fall in temperature did not quite correspond to a normal pneumonia crises. A similar observation was made in our series of cases. With the rapid fall in temperature there was also a fall in the pulse-rate, but the slowing of the pulse was not so marked as the fall in temperature. In many cases the pulse-rate only became normal forty-eight hours, and sometimes much longer, after the temperature had returned to normal. Similarly the chest signs took some time to clear up. On the other hand, in only four of the treated cases was it necessary to give a sedative for restlessness or delirium after twelve hours' treatment. Stimulants were only required in four treated cases. Oxygen administration was not considered necessary and therefore not given to any of the treated cases.

SEVERITY OF THE COURSE OF DISEASE (EXCLUDING DEATHS)

—	Mild	Moderate	Severe	Total
Treated cases ..	72	27	1	100
Control cases ..	37	49	10	96

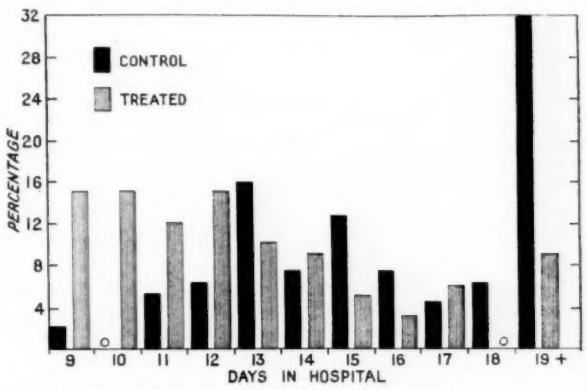


FIG. 5—Chart of length of stay in hospital of treated cases and controls.

Average stay in hospital.—The average stay in the City Deep Hospital of a case of pneumonia is about eighteen days. On discharge from hospital all pneumonia cases are given a minimum of fourteen days light surface-work and then re-examined by the medical officer of the mine, when a further period of light surface-work may be given, depending on the rapidity of convalescence. The average detention in hospital for the control cases was 18·5 days and for the treated cases 12·9 days (fig. 5). Apart from the reduced period of stay in hospital, one must not lose sight of the fact that, since most of the treated cases ran a mild course, the convalescence was therefore more rapid and the necessary period of light surface-work was less than in the control cases.

Dosage.—The most satisfactory form of dosage for routine treatment was found to be 2 g. immediately on admission, followed by 1·5 g. four-hourly for the first twenty-four hours. Sixty-four cases were treated with this initial form of treatment. If at the end of this period improvement was observed, together with a fall in temperature to 100° F. or lower, the dose was reduced to 1 g. four-hourly. If this response was not obtained, 1·5 g. was continued for a further

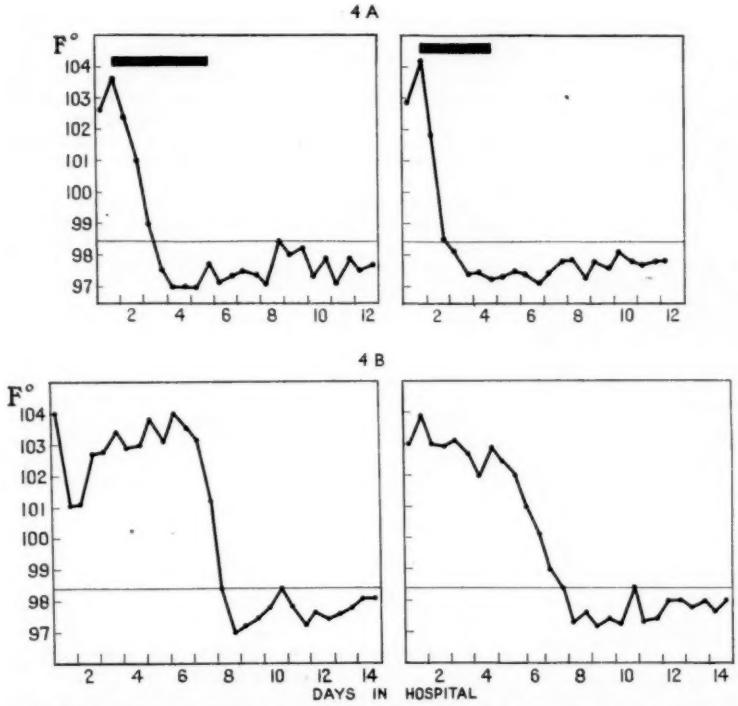


FIG. 4—Typical temperature charts. A, in treated cases; B, in controls.

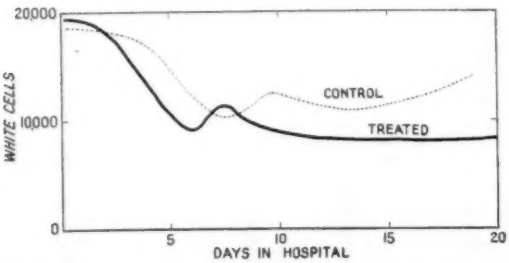


FIG. 6—Curves of leucocyte count in treated cases and controls.

twenty-four hours. Finally, 0·5 g. four-hourly was given until the temperature had been normal for two days. In 76 of the cases the drug treatment was given for four days or less. A total of less than 25·5 g. was given to 65 cases; a total of 26·0–45·5 g. to 30 cases; and the remainder received over 46 g. The maximal quantity of drug administered to one case was 70 g.

Vomiting occurred in 15 of the cases. Most of these cases only vomited once, and the drug treatment was continued as outlined above. In a few cases it was found necessary to omit one or two doses and then to continue the treatment, when no further vomiting occurred. There was never any vomiting in the first twelve hours of the drug treatment.

Mortality and complications.—The case-mortality for pneumonia in the City Deep Hospital for the

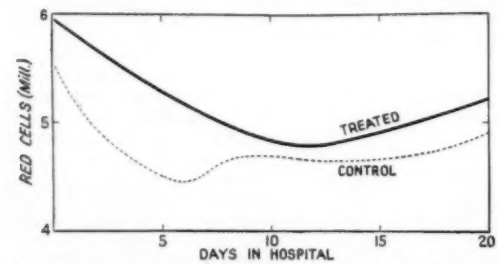


FIG. 7—Curves of erythrocyte count in treated cases and controls.

last three years averages 14·4 per cent. During July and August, 1938, a comparatively mild form of pneumonia was encountered, as shown by the fact that of the 51 control cases treated during this period only 1 terminated fatally. The total mortality for the whole of the period of this investigation was 4 of the control cases (confirmed post mortem) and 0 of the treated cases. In the treated group 2 cases of serous pleural effusion occurred, 1 sterile and 1 in which a scanty growth of hæmolytic streptococci and *Staphylococcus albus* was found; in the control group there was 1 sterile serous effusion and 1 pneumococcus empyema.

SUMMARY

M. & B. 693, without any other treatment apart from nursing, was given to 100 cases of lobar pneumonia in native mine labourers. At the same time 100 cases of pneumonia in similar subjects were treated on the usual lines as controls. No serum or vaccine was used in any of the cases recorded. All these cases were admitted during the South African winter and early spring months. The age-incidence, tribe, and location of the lung lesions were more or less the same in both groups.

M. & B. 693 treatment was begun only when the disease was far enough advanced to place the diagnosis beyond doubt. This often meant a delay of several days, even though pneumonia was suspected.

During July and August a mild form of pneumonia was encountered, but the virulence increased in September and October.

The case-mortality in the series under review was 4 per cent. for the control series and 0 in the treated series. In the treated cases there was on the whole a very much shorter pyrexial period, a milder course without any severe toxæmia, and therefore a reduced

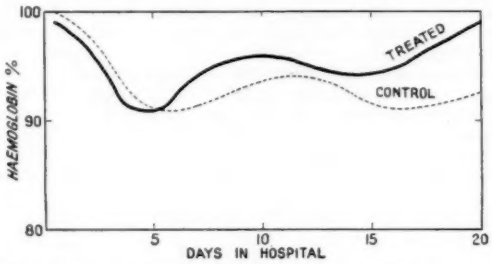


FIG. 8—Curves of hæmoglobin percentage in treated cases and controls.

period of convalescence as compared with the controls. Further, the drug appeared to inhibit any progress of consolidation.

BLOOD EXAMINATIONS

(*Reported by* DR. W. A. BURNETT)

At the outset of the experiment on the City Deep Ltd. it was decided to investigate any changes which might take place in the blood of control and treated cases. Observations were made on the erythrocyte and leucocyte counts, the hæmoglobin percentage, and the erythrocyte-sedimentation rate. The results of these examinations are summarised and a "free curve" is used to depict them graphically (figs. 6–9).

Fåhraeus (1921) indicates that the decrease in the suspension stability of the erythrocytes is probably a function of the breakdown of tissue proteins. If this is accepted, the beneficial influence of M. & B. 693 is apparent, because, when this drug is used, the

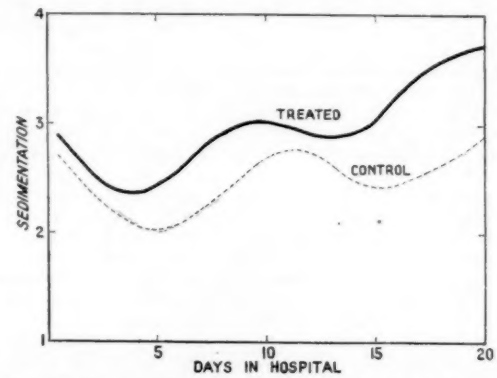


FIG. 9—Curves of sedimentation-rate in treated cases and controls.

destruction of erythrocytes and hæmoglobin is less. The sedimentation curves closely follow those for hæmoglobin, but whether the suspension stability is a factor of the hæmoglobin-content and the red-cell count is a moot point.

The findings appear to indicate that: (1) Up to the crisis M. & B. 693 produces a rapid decrease in leucocytosis, followed by a slight increase three days later and, subsequently, an uneventful recovery to normal values (fig. 6). (2) The erythrocyte destruction with M. & B. 693 is slower and less pronounced and shows a better recovery-rate (fig. 7). (3) M. & B. 693 produces a more rapid destruction of hæmoglobin but is followed by a quicker and more sustained recovery to normal values (fig. 8). (4) The blood-suspension stability is less affected by M. & B. 693, and recovery to normal values is reached earlier (fig. 9).

CONCLUSIONS

M. & B. 693 appears to be a very effective and convenient drug in the treatment of pneumonia in native mine labourers. There is strong clinical evidence to suggest that even better results might have been obtained by giving the drug as soon as the disease was suspected, instead of waiting until the clinical diagnosis was beyond doubt.

I have to thank Dr. A. J. Orenstein, chief medical officer, Rand Mines Health Department, for affording me the opportunity of conducting this investigation; my colleagues, Drs. C. Berman and W. A. Burnett, of the City Deep Hospital staff, for coöperation in dealing with the cases under their care; and the director of the South African Institute for Medical Research for providing the facilities for bacteriological examinations.

(To be concluded)

TREATMENT OF CHRONIC MYELOID LEUKÆMIA

IMPORTANCE OF THE MYELOBLAST

By M. C. G. Israëls, M.D., M.Sc. Manc., M.R.C.P.
FOULERTON RESEARCH FELLOW OF THE ROYAL SOCIETY

THE course of a chronic myeloid leukæmia often ends rather abruptly. The radiotherapy which has so far kept the patient well quite suddenly becomes ineffective, the anæmia steadily increases, and the patient dies. The onset of this resistant phase is signalised in many patients by the appearance of myeloblasts in the blood. Panton, Tidy, and Pearson (1914) noted that in 4 out of 29 patients, 3 of whom were under twenty years old, the appearance of myeloblasts was rapidly followed by death. Piney and Riach (1932) described in detail a case of chronic myeloid leukæmia in which the appearance of myeloblasts coincided with failure to respond to radiotherapy. Arendt and Gloor (1932) found that the terminal stage of the disease was sometimes accompanied by showers of myeloblasts; further radiotherapy was then possibly dangerous; Forkner (1938) made similar observations. Other authors, such as Hoffman and Craver (1931) and Watt (1936), do not mention this change, their patients having died of intercurrent disease.

Myeloblasts are sometimes found in the blood of patients who have not received any treatment; but, as will be seen from the following case-records, they are not apparently of the same grave significance as they are at later stages, provided that they disappear when treatment is given.

Since there is still some confusion, it is necessary to state that the term "myeloblast" is here restricted to the *oxidase-negative* primitive cells of the myeloid series; when oxidase-positive granules appear, the cells are classed as promyelocytes; this question has been fully discussed elsewhere (Israëls 1936). The necessity of making this distinction is illustrated by the contradictory results obtained by Radiojević (1932), who includes oxidase-positive cells among the "myeloblasts." Two of his patients, who both had initial "myeloblast" counts of 41 per cent., died, although the counts were reduced by treatment, but a third patient with 35 per cent. survived for two and a half years. The oxidase-stain I have used is copper-benzidine-peroxide as used by Sato and Sekiya (1926).

The case-records given here are of adult patients with chronic myeloid leukæmia in whose blood myeloblasts appeared during the course of the disease. The blood-counts in the table are limited to those at significant stages, being selected from the complete records.

CASE-RECORDS

CASE 1.—A traveller, aged 43, gave a two years' history of ill health—fatigue, dyspepsia, pallor, and loss of weight. A diagnosis of chronic myeloid leukæmia had been made, and arsenic and some radiotherapy had been given successfully; he was able to return to work. About two months before admission to the Manchester Royal Infirmary he noticed swelling of the abdomen. On admission the spleen was grossly enlarged; other signs were not notable. The blood-count was typical:—

Red cells	3,110,000	Polymorphs	54·5%
White cells	142,000	Lymphocytes	7·0%
Hæmoglobin	50%	Monocytes	1·0%
Colour-index	0·86	Eosinophils	2·5%
Nucleated red cells	2 per 400 white cells	Basophils	6·0%
		Metamyelocytes	16·5%
		Myelocytes	12·5%
		Myeloblasts	0

He was given a course of radiotherapy, and the white cells showed a satisfactory reduction. After the fourth treatment the white-cell count again increased, and oxidase-negative myeloblasts were present. His condition became steadily worse in spite of further radiotherapy, and eight weeks after admission his relatives took him home, where he died shortly afterwards.

CASE 2.—A hat-worker, aged 32, first attended the out-patients' department in February, 1933, complaining of intermittent priapism. An enlarged spleen was found, and his blood-count revealed typical myeloid leukæmia:—

Red cells	3,960,000	Polymorphs	55·0%
White cells	107,000	Lymphocytes	5·0%
Hb...	70%	Monocytes	3·0%
C.I...	0·87	Eosinophils	0·5%
Nucleated red cells	1 per 400 white cells	Basophils	0
		Metamyelocytes	30·5%
		Myelocytes	6·0%
		Myeloblasts	0

He was given radiotherapy and remained well for twelve months. In March, 1934, he was admitted to hospital because of failing general health, and his blood-count then showed that myeloblasts were present. Radiotherapy was continued, and there was a temporary improvement in his general condition; but in June of that year he was readmitted in a very weak state with both liver and spleen greatly enlarged. He was very anæmic, and there were now 45 per cent. of myeloblasts. His condition became steadily worse, and he died two and a half weeks later. At autopsy the femoral bone-marrow showed

large groups of myeloblasts among the general hyperplasia of granular leucocytes of all types.

CASE 3.—A slipper-hand, aged 36, was admitted to hospital in October, 1934, with a ten months' history of pain in the left hypochondrium, fatigue, and loss of energy. The spleen was found to be moderately enlarged, and enlarged lymph-glands were found in most sites. The blood-count showed myeloid leukæmia :—

Red cells ..	.. 3,390,000	Polymorphs	.. 54·5 %
White cells	.. 158,000	Lymphocytes	.. 1·75 %
Hb... ..	.. 54 %	Monocytes..	.. 0
C.I... ..	.. 0·79	Eosinophils	.. 0·5 %
Nucleated red cells	5 per 400 white cells	Basophils ..	.. 5·0 %
		Metamyelocytes	.. 10·75 %
		Myelocytes	.. 27·0 %
		Myeloblasts	.. 0·5 %

He was given iron and arsenic (liq. arsenicalis 9 minims daily) and a course of radiotherapy. He responded very well and was able to return to work. He remained well until July, 1936, when he complained of an enlarged and painful spleen. From this time his condition deteriorated; his anæmia and the percentage of myeloblasts in the blood steadily increased, and, in spite of the fact that renewed radiotherapy had reduced the leucocyte count, he died on Sept. 7. At autopsy the femoral bone-marrow showed considerable hyperplasia; there were numerous neutrophil and eosinophil granulocytes and among them a few groups of myeloblasts.

CASE 4.—A housewife, aged 40, was admitted to hospital in July, 1935, complaining of increasing enlargement of the abdomen, which had been first noticed a year before. At that time myeloid leukæmia had been diagnosed, and one treatment with radiotherapy had been given at another centre. The spleen was enormous and the liver also considerably enlarged. The blood-count showed :—

Red cells ..	.. 2,004,000	Polymorphs	.. 30·25 %
White cells	.. 468,000	Lymphocytes	.. 2·0 %
Hb... ..	.. 42 %	Monocytes..	.. 0
C.I... ..	.. 1·05	Eosinophils	.. 2·75 %
Nucleated red cells	1 per 400 white cells	Basophils ..	.. 2·75 %
		Metamyelocytes	.. 9·0 %
		Myelocytes	.. 51·5 %
		Myeloblasts	.. 1·75 %

She was given iron, arsenic, and radiotherapy, and responded excellently. She remained well until November, 1937, when she complained of increasing size of the spleen and great weakness. Her anæmia increased, and myeloblasts reappeared in the peripheral blood. She was readmitted to hospital on Dec. 16 because of a severe hæmatemesis and epistaxis. Sternal puncture showed :—

Polymorphs ..	.. 1·6 %	Hæmocytoblasts	.. 0·8 %
Myelocytes ..	.. 0·8 %	Normoblasts..	.. 0
Myeloblasts ..	.. 96·8 %		

The epistaxis was checked, but the patient died five days later. Microscopical examination of the femoral bone-marrow after the autopsy showed that it was very hyperplastic, the cells being nearly all myeloblasts; myelocytes were few and normoblasts rare.

CASE 5.—A man aged 40, first seen in October, 1934, had been treated six months previously, in America, for chronic myeloid leukæmia and now reported for further treatment. The spleen was moderately enlarged, and no other signs were detected. The blood-count showed :—

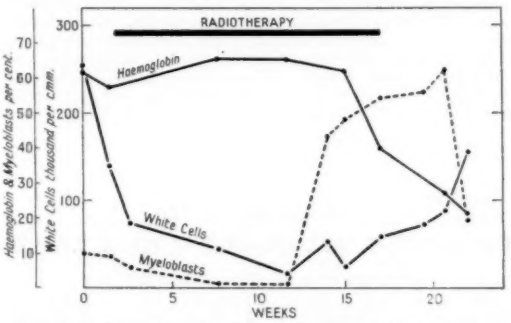
Red cells ..	.. 5,180,000	Polymorphs	.. 57·5 %
White cells	.. 44,800	Lymphocytes	.. 6·0 %
Hb... ..	.. 94 %	Monocytes..	.. 0·5 %
C.I... ..	.. 0·9	Eosinophils	.. 1·5 %
Nucleated red cells	0	Basophils ..	.. 1·5 %
		Metamyelocytes	.. 17·0 %
		Myelocytes	.. 16·0 %
		Myeloblasts	.. 0

Control was easily maintained with radiotherapy until December, 1935, when he was admitted to hospital on account of increasing dyspnœa and pallor and because he had developed a rash of flattened raised nodules, none bigger than ½ in. across, on his back, arms, thighs, and chest. The spleen and liver were now much enlarged. The blood-count showed increased anæmia and the presence of myeloblasts. He died a week after admission. The autopsy showed the femoral bone-marrow to be intensely hyperplastic; areas in which myeloblasts predominated alternated with areas in which granulocytes predominated. The dermis in the skin nodules was infiltrated with myeloblasts and a few granulocytes.

CASE 6.—A greengrocer, aged 28, first seen in March, 1937, had been quite well up to three months previously, when he began to complain of weakness, backache, and, later, pain in the left hypochondrium. A very enlarged spleen was found, but there was no enlargement of the liver or lymph-glands. The blood-count showed :—

Red cells ..	.. 3,488,000	Polymorphs	.. 37·5 %
White cells	.. 257,000	Lymphocytes	.. 1·5 %
Hb... ..	.. 62 %	Monocytes..	.. 1·5 %
C.I... ..	.. 0·88	Eosinophils	.. 4·25 %
Nucleated red cells	4 per 400 white cells	Basophils ..	.. 6·5 %
		Metamyelocytes	.. 8·0 %
		Myelocytes	.. 30·75 %
		Myeloblasts	.. 10·0 %

The figure shows that the application of radiotherapy reduced the proportion of myeloblasts and the total white-cell count, and there was some improvement



Graphs showing effect of radiotherapy on chronic myeloid leukæmia (see Case 6).

in the anæmia and in the general condition. In June, 1937, however, he felt much worse; blood examination revealed myeloblasts in increased numbers, and, in spite of some further radiotherapy, he rapidly became worse and died on August 12. The femoral bone-marrow was very hyperplastic and contained many myeloblasts and many lymphocytes.

CASE 7.—A retired manufacturer, aged 68, first seen in September, 1937, had complained of loss of appetite, loss of weight, and epigastric pain for the previous two months. A very enlarged spleen was found, but no other notable signs. The blood-count was typical of chronic myeloid leukæmia :—

Red cells ..	.. 3,870,000	Polymorphs	.. 51·25 %
White cells	.. 292,000	Lymphocytes	.. 0·75 %
Hb... ..	.. 60 %	Monocytes..	.. 0
C.I... ..	.. 0·79	Eosinophils	.. 0·25 %
Nucleated red cells	0	Basophils ..	.. 1·5 %
		Metamyelocytes	.. 19·5 %
		Myelocytes	.. 26·75 %
		Myeloblasts	.. 0

Sternal puncture showed a similar picture: myeloblasts 2·5 per cent., normoblasts 3 per cent., and the rest granulocytes. He was given iron and increasing doses of arsenic. Although the patient felt improved, the blood-count showed little change even after

five weeks' treatment. He was therefore sent for radiotherapy, which quickly reduced the white-cell count, but the anæmia was not improved. In January, 1938, the patient felt very weak, and the myeloblasts in the blood were much increased. He did not attend after Jan. 20, and his death was reported by his doctor two weeks later.

DISCUSSION

These case-records, summarised in the accompanying table, illustrate the fact that for the proper control of the treatment of chronic myeloid leukæmia three important guides are obtained from the blood-count.

BLOOD-COUNTS IN CHRONIC MYELOID LEUKÆMIA

Case	Count and date	Myeloblasts (per cent.)	Hæmoglobin (per cent.)	White cells (thousands per c.mm.)
1	(*a*) Nov. 10, 1934	0	50	142
	(*b*) Dec. 7, „	0	46	64
	(*c*) Dec. 29, „	42	42	273
2	(*a*) Feb. 28, 1933	0	70	102
	(*b*) May 9, „	0	—	42
	(*c*) June 29, 1934	30	29	80
3	(*a*) Oct. 23, 1934	0·5	54	158
	(*b*) Mar. 14, 1935	0	98	43
	(*c*) Sept. 5, 1936	49	14	28
4	(*a*) Aug. 27, 1935	1·75	42	468
	(*b*) Jan. 2, 1936	0	92	12·5
	(*c*) Dec. 16, 1937	94	16	96
5	(*b*) Oct. 19, 1934	0	94	45
	(*c*) Dec. 27, 1935	77	28	336
6	(*a*) Mar. 4, 1937	10	62	257
	(*b*) April 27, „	1	66	41
	(*c*) July 29, „	62	27	90
7	(*a*) Sept. 23, 1937	0	60	292
	(*b*) Dec. 16, „	0	60	121
	(*c*) Jan. 20, 1938	72	42	16

The counts given show the condition (*a*) when first seen, (*b*) when fully treated, and (*c*) near the termination.

In order of importance these are the proportion of immature leucocytes, the anæmia, and the total leucocyte count.

The *proportion of immature leucocytes* is an excellent guide to the severity of the leukæmia, as several authors have pointed out, and it should steadily diminish under successful treatment. Myeloblasts are especially important; it is quite common to find a small percentage of myeloblasts when the patient first attends for diagnosis (cases 3, 4, and 6). If they disappear rapidly under treatment, the prognosis is as a rule reasonably good—case 3 lived for two years and case 4 for three years after the commencement of treatment—but, if they increase in proportion, especially with radiotherapy, the prognosis is bad, irrespective of any reduction in the total leucocyte count, and treatment will be ineffective and survival usually measured only in weeks.

When the patients recorded here, except case 6, were given radiotherapy, the myeloblasts, if present, disappeared from the blood shortly after treatment was initiated. They returned after periods varying from a few weeks to two and a half years, and their return was invariably the signal that the terminal phase of the illness had begun. Their reappearance was sometimes remarkably rapid, and the myeloblasts in the blood rose to a very high percentage (case 4); sometimes it was more gradual, and the myeloblasts were less prominent (cases 2 and 3). These differences were reflected in the relative numbers of myeloblasts as compared with polymorphonuclear cells and myelocytes found in the bone-marrow at autopsy—in case 4 at biopsy. In those patients who had at first no myeloblasts in the blood the same variation of rapidity and completeness of the myeloblastic transformation was seen (cases 1, 5, and 7), and a steadily increasing percentage of myeloblasts had a similar fatal significance. The prognostic value of this myeloblastic change was independent of any reduction in numbers that might be brought about by radiotherapy (cases 3 and 7).

This mode of termination has been common among my patients, myeloblastic transformation having occurred in 10 out of 21 fatal cases whose cause of death was known. It seems reasonable therefore to insist that myeloblasts should be carefully looked for and their reaction to treatment, when the patient first attends, watched. If they appear, or fail to disappear, radiotherapy should be stopped, since it seems that it can do no good in these circumstances; in fact Béclère (1930) and Isaacs (1932) have suggested that it may even aggravate the condition. The differential white-cell count is thus an important guide for the control of the treatment of this disease.

The *anæmia* always responds to effective treatment. When the hæmoglobin fails to rise, the outlook is not so hopeful (cases 1, 6, and 7), and, if it falls, the prognosis is grave. Increasing anæmia is often the first sign that a phase of resistance to radiotherapy is about to appear, and it often runs parallel with the appearance of myeloblasts. The anæmia in chronic myeloid leukæmia is most commonly of the hypochromic microcytic type, sometimes normocytic, and rarely megalocytic. The microcytic anæmia responds well to iron and should be treated with full doses—e.g., ferrous chloride 18 grains daily—whether radiotherapy is given or not; iron should also be given to the patients with normocytic anæmia. The megalocytic type does not seem to respond either to liver therapy or to iron.

The *total leucocyte count* is the least reliable of these guides, and Forkner (1938) has said, with some justice, that it is inadvisable to use it alone as an indication for starting, stopping, or resuming treatment. However, if the anæmia is improving and the immature leucocytes are disappearing, the total leucocyte count should be watched, since a count of less than 10,000–20,000 per c.mm. is undesirable. Enough has been said under the previous two headings to emphasise that by itself the total leucocyte count is an unreliable guide to the progress of treatment.

We have seen that the satisfactory results of radiotherapy may be suddenly interrupted by the appearance of myeloblasts, with an invariably fatal result. The reasons for this myeloblastic transformation are unknown, and Isaacs (1932) has brought forward evidence which suggests that the radiotherapy itself may be implicated. Consequently it has been suggested that radiotherapy should be held in reserve and other forms of treatment tried first. Forkner (1938) has especially protested against the use of a high leucocyte count as an indication for beginning radiotherapy. He points out that if neither the anæmia nor the proportion of immature leucocytes is increasing and if significant symptoms, such as excessive fatigue, pressure of an enlarged spleen, and hæmorrhages, are not serious, the patient may remain symptomatically well for considerable periods. The course of such cases as case 7 in this series, in which myeloblastic transformation rapidly followed the beginning of radiotherapy, adds point to his contention. Thus, before radiotherapy is begun, the anæmia should be energetically treated, and this

will often bring about a striking improvement, as exemplified by the following case-record:—

A man, aged 61, was sent to hospital because of increasing weakness and pallor. There were no notable signs, and a fractional gastric analysis showed complete achlorhydria The blood-count was:—

Red cells ..	.. 1,980,000	Polymorphs ..	.. 52%
White cells	.. 74,500	Lymphocytes	.. 12%
Hb... ..	.. 17%	Monocytes ..	.. 0
C.I... ..	.. 0·43	Eosinophils ..	.. 0
Nucleated red cells	2 per 500 white cells	Basophils ..	.. 6%
		Metamyelocytes	.. 13%
		Myelocytes ..	.. 17%
		Myeloblasts ..	.. 0

Sternal puncture confirmed the diagnosis of myeloid leukæmia, and no myeloblasts were seen. He was first treated with ferrous chloride gr. 18 daily, and in four weeks his red cells had risen to 3,660,000 per c.mm. and the hæmoglobin to 62 per cent., the immature leucocytes being simultaneously reduced by about 10 per cent.; there was corresponding general improvement.

When the maximal improvement has been obtained from anti-anæmia treatment, radiotherapy can be begun if the patient's condition is still unsatisfactory. Forkner (1932), Stephens and Lawrence (1936), and others have claimed good results from arsenic treatment, but experience of this at Manchester has not been encouraging.

SUMMARY

(1) Seven cases are described of patients with chronic myeloid leukæmia who had myeloblasts in the peripheral blood. (2) When the patient has not received treatment, the presence of myeloblasts is not of serious significance if they disappear when radiotherapy is begun. If they increase, the outlook is grave, irrespective of any changes in the total leucocyte count. (3) When myeloblasts appear during treatment, they usually signify that radiotherapy is no longer effective, and that, whatever the total leucocyte count, death is imminent. The completeness of the myeloblastic transformation in the bone-marrow is parallel to that in the peripheral blood. (4) The effectiveness of treatment is best judged by the diminution of the proportion of immature leucocytes and by the improvement in the anæmia. (5) The anæmia should be thoroughly treated, and radiotherapy may be postponed, provided that the immature leucocytes do not increase and the patient's clinical condition warrants it.

This work has been carried out in the department of clinical investigation and research, the University and Royal Infirmary, Manchester. I am indebted to the director of the department, Dr. John F. Wilkinson, and other members of the honorary staff of the Manchester Royal Infirmary who have kindly granted me the necessary facilities.

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TORSION OF THE APPENDIX OF THE TESTIS

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TORSION of the testicle or spermatic cord has long been a recognised clinical entity; but torsion of the appendix of the testis or hydatid of Morgagni is not so well known. The most recent British text-book on genito-urinary surgery does not refer to it.

The first mention of the condition is as recent as 1922, when Colt described it. Mouchet's (1928) writings have done much to make the condition well known on the Continent, whence most of the reported cases have come. Dix in 1931 reviewed the 45 cases on record and added 2 from his own practice. In 1935 only 2 cases had been described in North American literature (Foshee 1932) but more recently Lambert and Smith (1938) have described 3 cases occurring within three years in a school of 650 boys.

These remarks suggest that torsion of the appendix of the testis is very rare; but the greater number of cases reported lately and the fact that I have seen 3 within the last four years in the children's out-patient department at the Ulster Hospital show that it only needs to be more widely recognised.

ÆTIOLOGY

The condition is seen at all ages, but chiefly perhaps between 11 and 14 years. In the cases on record one patient was only eleven months old and three were over 60. Among my cases one was a baby of thirteen months and the two others were both 12 years old. Either left or right side may be affected. There is no known cause of the torsion. One of the American cases described started when the patient was kicked on the scrotum by a pet rooster (Rhodes 1935). In one of my cases the first attack began as the patient sat by the fire, and the second attack was precipitated by his jumping down from a hospital stool after having his finger dressed. Appendages vary much in size and in the length and fixation of their pedicle (fig. 1). The larger the appendage and the narrower its pedicle, the greater the chance of torsion.

As with all pedunculated masses liable to undergo torsion, several attacks may precede the one that brings the patient to operation. The twist may be partial and undo itself, or one twist may not be sufficient to interfere with the circulation of the appendage. Two of my patients had had preceding attacks. In one the first attack occurred two weeks, in the other three days, before he was seen. In both these cases there was only one complete twist. In the baby there were two complete twists.

SYMPTOMS AND SIGNS

The pain may be slight or severe. In the baby of eleven months the mother did not think that he had any pain; she brought him to hospital because of the scrotal swelling. In one of the boys the pain was so severe as to cause slight shock, with rapid pulse and cold clammy skin. Such severe pain is unusual in torsion of the appendage of the testis; it is commoner in torsion of the testis. The pain is referred to the testis and to the iliac fossa or to the groin on the affected side.

Constitutional symptoms are usually mild. Vomiting is uncommon. The temperature is as a rule normal,

but temperatures of 100° F. have been recorded. These milder symptoms distinguish this condition from torsion of the testis. In no case reported were there any urinary symptoms.

The most significant sign in the acute stage is swelling of the scrotum. The scrotal skin is œdematous and slightly red; the œdema may extend slightly over to the unaffected side. It is evident within three hours of the onset of the pain and is out of all proportion to the minuteness of the lesion. It is the most valuable point in diagnosis in the whole syndrome. The testicular mass is swollen and tender, and this tenderness, with the small hydrocele present in all acute cases, prevents accurate palpation of the testicular elements. The cord above the testis is slightly swollen. In the more chronic cases the œdema has subsided and the testicular reactionary swelling has disappeared, so that a small pea-like body, the twisted appendage, may be palpated in the sulcus between the caput majus of the epididymis and the upper pole of the testis. The testicle hangs in its normal relation to the vas deferens.

DIAGNOSIS

Once the condition is thought of, the diagnosis is not difficult. A torsion of the testicle and one of the appendix of the testicle are the only two conditions that cause such rapid swelling and œdema of the scrotal coverings. The milder the general symptoms, the more probable is a twisted appendage. If the testicle hangs normally and the vas enters it in the normal relationship, the diagnosis is torsion of the appendix testis and not of the testicle.

Orchitis and epididymitis do not cause œdema of the scrotal skin until late in the disease, when the œdema is localised to the immediately adjacent area. At this stage the condition cannot be confused with torsion of an appendage. Dix (1931) aptly remarks that cases diagnosed as acute epididymo-orchitis in children are probably torsion of the testicular appendage.

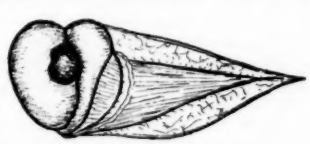

FIG. 2—Sketch made at operation, showing twisted appendage of case 3. It was dark red and swollen, lying in the sulcus between the upper pole of the testis and epididymis.

FIG. 3—The appendage shown in fig. 2 has been untwisted and become more normal in shape and size. The appendage of the epididymis present is also shown. Both appendages are larger than is usual and were removed.

TREATMENT

The condition is not dangerous to life, and with conservative treatment the swelling will gradually subside and the process be at an end in about a fortnight. This end-result can safely be brought about by operation and the suffering of the patient and his stay in bed appreciably shortened. Operation is devoid of risk, and pain is immediately lessened. These patients may be allowed up a couple of days after operation. Operation should be urged if the surgeon suspects torsion of the testicle.

Operation.—An incision 1–2 in. long, depending on the size of the testis to be delivered, is made over the pubic spine in line with the structures of the cord, as in the operation for varicocele. The testis is pressed up into the wound, and the coverings of the tunica are incised. These coverings will be found slightly œdematous. When the parietal tunica vaginalis is cut through, about a drachm of straw-coloured, sometimes blood-stained, fluid escapes. The testicular and epididymal surfaces appear normal. Lying in the sulcus between the caput majus of the epididymis and the upper pole of the testis, and attached to the upper pole of the testis near the sulcus, is found a small dark red body, usually about the size of a small pea. In one reported case it is said to have been as large as an English walnut. It will be found that one or two complete twists of its pedicle have caused a hæmorrhagic infarction of the appendix testis or of the appendix epididymis. These twists may be clockwise or counterwise. The narrow pedicle is ligatured and the appendage removed. The tunica vaginalis is left open. Some authors recommend turning it inside out, but this appears to me unnecessary. The wound is closed, and convalescence should be uneventful.

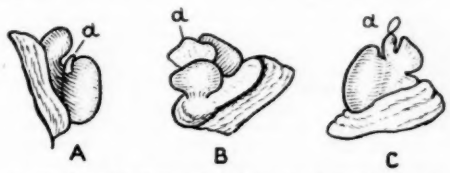

FIG. 1—Testes of full-time fœtus (natural size). A, a small appendage (*a*) of the testis of the more usual size; B, a large appendage (*a*) of the epididymis looked at from above; C, the same appendage looked at from the side.

CASE-RECORDS

CASE 1.—Infant aged thirteen months. The mother had noticed a swelling, which had only been present for one day, in the right side of the baby's scrotum and could not account for it. The child had remained in his usual good health, taking his food well and showing no unusual symptoms, and did not appear to be in pain. The house-surgeon found the scrotum swollen, œdematous, and somewhat red and the testis enlarged and tender. The cord seemed thickened. He instructed the mother to bring the child back two days later. Three days from the onset, when seen by me, the child appeared to be quite well. His temperature was 98·8° F. The right side of the scrotum was swollen, the skin being œdematous and slightly red. The testicle was tender and appeared to be enlarged. The tenderness made it impossible to palpate the testicle minutely. A diagnosis of a torsion of the testicle or of its appendage was made and operation undertaken about an hour later. Operation showed a typical dark red twisted appendage. Its base was ligated and the appendage removed. Recovery was uneventful.

CASE 2.—A boy aged 12 was brought to the Ulster Hospital because of acute pain in the left side of his scrotum and of his abdomen. He stated that he had had the same pain, but not so severe, a fortnight previously. The present pain started about 7.30 that morning and was so severe that he felt faint. When seen three hours later at the hospital he was pale and mildly shocked, with cold clammy skin and a pulse-rate of 108. The left side of the scrotum was œdematous, red, and swollen. The testicle was tender and enlarged, but no details could be palpated. The cord bore the normal relation to the testicle

and was slightly thickened. A diagnosis of twisted appendix of the testicle was made. At operation a few hours later a testicular appendage with hæmorrhagic infarction was removed. It had been twisted through one complete turn in an anti-clockwise direction.

CASE 3.—A boy aged 12. Three days before coming up to the hospital he had been sitting in front of the fire, when he felt a severe pain in the left groin. He did not vomit and took his evening meal. The pain persisted till he fell asleep that night. The next day he was quite well, and he remained so till the afternoon of the morrow, when he came to hospital to get a finger dressed. When jumping down from the stool in hospital he again felt a severe pain in the left groin. He went home, but the pain got gradually worse, and five hours after the onset of the pain he noted that the scrotum was swollen and the testicle tender. He slept well that night and reported at hospital on the morrow.

When seen by me the scrotum was œdematous, red, and swollen. The œdema was on the left side but spread slightly over to the right side. The testicle was enlarged and very tender, so that details could not be palpated, but the vas deferens bore the normal relation to the testicle. A diagnosis of twisted appendage of the testicle was made and operation performed a few hours later. The findings were like those in case 2. There was about a drachm of straw-coloured fluid in the tunica vaginalis, and in the sulcus at the upper pole of the testis was a dark red twisted appendage of the testis (fig. 2). It had undergone one complete clockwise twist. It was removed in the usual manner. There was also present in this boy an appendix of the epididymis, but it was not twisted (fig. 3). This was also removed in case it should become the seat of a similar incident.

SUMMARY

Three cases of torsion of the appendage of the testis (hydatid of Morgagni), treated by surgical ablation of the appendage, are described. The constitutional symptoms are, as a rule, milder than those of torsion of the testis, and the most important local sign is scrotal œdema.

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ANEURYSM OF BOTH POPLITEAL ARTERIES

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THE following case is not unique, but it was presented to me in such a way that I had to consider the natural history and the treatment of popliteal aneurysm in the same patient. It caused me some anxiety and made me refer to much of the literature on the subject, which gave me little confidence or comfort. The condition is not very common in these days, and there is therefore in recent writings on the subject a wealth of general statement and a scarcity of detailed case records. I am writing a report of this case, hoping that it may help someone who has a similar problem to solve.

A big heavy man, aged 73, was squatting in front of the fire using the bellows. He suddenly felt a pain behind the right knee, and the whole of the leg below the knee went "cold and dead." He had previously been in very fair health; there was a history of attacks which might have been those of angina pectoris; he had for some time had pains in both calves on walking; six months previously he had spent six weeks in bed owing to swelling of the left leg, diagnosed as phlebitis.

Examined four hours after the onset of the pain the right leg below the knee was cold and white; there was no pulsation in the dorsalis pedis and posterior tibial arteries. There was no gross arterial or cardiac disease. A diagnosis of embolism of the bifurcation of the popliteal artery was made.

In the left (healthy) leg there was no pulsation in the arteries of the foot, but there was a huge aneurysm of the popliteal. The upper limit was palpable on the inner side of the thigh, apparently above the opening of the femoral artery in the adductor magnus; the lower limit was on the outer side of the leg, ½ in. below the head of the fibula.

I decided against an immediate exploration of the right popliteal for various reasons. Five days later it was obvious that there was going to be only a very limited recovery of life below the knee. I amputated through the lower third of the thigh and, in doing so, found that the cause of the gangrene was thrombosis in a popliteal aneurysm. The stump healed by first intention. The Wassermann reaction was negative.

The explanation seemed to be that an aneurysm had formed as a result of local arterial disease; owing to the position of acute knee flexion when squatting before the fire the weak artery had been kinked and clotting had occurred in the sac. I thought that most of the blood for the supply of the leg must have been passing through the sac, for otherwise its obliteration would not have been followed by gangrene. This was the thought that made me so anxious about the treatment of the aneurysm in the surviving leg; for, if spontaneous thrombosis in the right popliteal aneurysm was followed by gangrene, why should thrombosis induced by surgical ligature have any other effect? Excision of the aneurysm I considered impracticable on account of its size, but it was thought possible that some form of plastic operation to reduce the bulk of the sac might be possible in addition to ligature. It seemed essential to do something, since it was noted that in certain positions of flexion of the knee the foot became cold. It was further thought that the attack of swelling called "phlebitis" might have been due to venous obstruction following an increase in the size of the sac.

I finally decided that the risk of spontaneous thrombosis was so high that an operation ought to be undertaken, and for help in reaching this decision I am deeply indebted to Sir Thomas Dunhill, who saw the patient with me, and to Mr. Wilfred Trotter, with whom I discussed the problem and who gave me the stimulating comment that he had never regretted operating on a popliteal aneurysm, provided the bulk of the sac was in some way reduced.

The hip was flexed and everted, the knee flexed. An incision was made on the inner side of the thigh from Hunter's canal to the level of the knee-joint. The sartorius was retracted medially; the insertion of the adductor magnus below the opening of the femoral artery was divided; the femoral artery and the medial and upper limits of the sac were exposed. The femoral artery was ligatured immediately proximal to the sac; pulsation in the sac stopped at once. At the moment of ligature and at intervals of half an hour afterwards for three hours papaverine was injected hypodermically in the hope that spasm from the handling of the artery might be diminished. The sac was incised and as much clot as possible was removed. There was fresh arterial bleeding from small vessels inside the sac, a fact which, though worrying, was at the same time encouraging, suggesting some collateral circulation. (I am aware that such bleeding might signify a possible recurrence of the

aneurysm at some distant date, but that was a far lesser evil than immediate gangrene.) I controlled the bleeding by stitching the walls of the sac together from within the sac, and by this procedure I greatly reduced the bulk of the sac in its middle and inner portions; the distant portions of the sac in the outer and lower parts of the popliteal fossa were untouched.

After the operation there was never any doubt that the leg was viable. There has been no return of pulsation in the vessels of the foot, but the foot remains warm in all positions of the leg. The patient is walking well with an artificial leg.

COMMENTARY

The outstanding interest of this case to me is the difference between the dire result of the natural cure of the aneurysm in the one leg and the successful result of the surgical treatment in the other. Spontaneous thrombosis led to gangrene of the right foot; ligature improved the circulation of the left foot. It has been suggested to me that a possible explanation lies in the probable extension upwards of the clot in the natural thrombosis, obliterating the origins of the collateral vessels, and the more limited clotting induced by the ligature. This explanation I find difficult to believe. It is certain that some clotting took place above the ligature, and indeed in the historical treatises on popliteal aneurysm some emphasis is laid on the importance of ligaturing well above the immediate limit of the sac.

The two certain points of difference on the two sides were the reduction in the bulk of the sac at operation and the injection of papaverine.

Duncan Fitzwilliams[1] has recorded two cases in which the femoral artery was ligatured: one was successful; in the other gangrene followed the operation. The cases are reported to show, among other points, the importance of pre-operative arteriography; it is suggested that the absence of a collateral circulation, which can be demonstrated by radiography, should make one advise against a ligature until attempts have been made to open up a collateral circulation. I do not think that this deduction is sound. It seems to me to allow too little for the effects of the aneurysm produced by the mere presence of a tumour in a confined space. The limits of the popliteal fossa are very rigid; the presence of a large swelling within these rigid walls may well compress the potential collateral vessels, which may fail to show radiographically although well able to transmit blood when relieved of the external pressure of the aneurysmal sac.

Since I treated this patient I have seen a man who was under the care of Mr. Gwynne Williams in University College Hospital suffering from popliteal arterial obstruction not due to an aneurysm. I am concerned here only in emphasising those features of the case which are relevant to my discussion on popliteal aneurysm.

A healthy man, aged 26, was involved in a motor-cycle accident two and a half years ago. He received some sort of injury to his right calf. There is no record of the condition of the circulation of the foot immediately after the accident. When he recovered from the accident and began to walk again he found that he could only walk twenty yards before such pain developed in the calf that he had to rest. After a few minutes he was able to walk again. He has now so far recovered that he can walk half a mile before he has to stop. The right foot has seemed to him colder than the left, but there is now no difference of temperature between the two feet.

There is no pulsation in the right popliteal, posterior tibial, and dorsalis pedis arteries. On the inner side of the right knee there is a palpable blood-vessel about the size of the superficial temporal—presumably the anastomotica magna. No such vessel is palpable in the other leg.

I interpret the physical signs in this patient as demonstrating some sort of block in the popliteal artery due to the accident. The collateral circulation was adequate to maintain life in the leg but only limited function, but it is improving.

According to published reports and text-books the results of ligature of main limb vessels in young adults vary. It seems, however, reasonable to suppose that the collateral circulation has more chance of being efficient if the obstruction to the main vessel of the limb is gradually produced, and one would expect thrombosis of the main vessel of the limb to be safer in a case of aneurysm than in a case of injury.

CONCLUSIONS

In these two cases we are able to compare the results of pathological thrombosis in a presumably healthy artery in a young man and in an aneurysm in an old man, and the results of a surgical operation. An examination of these facts seems to me to lead to the following conclusions about the treatment of popliteal aneurysm:

(1) Ligature should be combined with excision or some form of plastic operation.

(2) If thrombosis occurs spontaneously in a known popliteal aneurysm, an operation should forthwith be performed to turn out some of the clots and to diminish the size of the sac.

(3) Papaverine hypodermically administered may help to maintain the collateral circulation during an operation or after a spontaneous thrombosis.

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UREA CLEARANCE IN HÆMATEMESIS

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Considerable interest has been shown in the rise of blood-urea which accompanies any severe bleeding from stomach or duodenum. The cause of the "uræmia" is still doubtful; and it is most probably due to several factors of varying importance in different cases. The question of functional renal impairment has been raised by Alsted (1936) and Witts (1937); but published data on renal function in hæmatemesis are very scanty.

The present paper is a study of renal function in twelve cases of gastro-intestinal hæmorrhage. The severity of some of these cases precluded the adoption of any very disturbing procedure; and principal reliance has been placed on the urea-clearance test of Van Slyke.

The history and theoretical basis of this test are dealt with at some length by Peters and Van Slyke (1931). In a review of tests of renal function Cope (1934) points out that the agreement of various clearance tests with one another is in great contrast to the conflicting results of other commonly used procedures; this consistency is a testimony to the general reliability of the clearance method of assessing renal function. Stewart (1938) recommends the urea-clearance test as giving very reliable information about total renal function.

The results obtained are shown in the table. The urea clearance is expressed as a percentage of normal function. Two values are given in each case, the first being synchronous with the other reported figures, the second a week later. The table also records blood-pressure, hæmoglobin, blood-urea, red cell volume per kilogramme of body-weight, and the amount of urine passed in 24 hours. The red cell volume was calculated from the blood volume, estimated by the dye method of Keith, Rowntree, and Geraghty (1915), as modified by Hooper et al. (1920).

UREA-CLEARANCE TEST AND OTHER FINDINGS IN TWELVE CASES OF GASTRO-INTESTINAL HÆMORRHAGE

Case	Blood-pressure	Hb % (Haldane)	Red cell volume (c.cm. per kg.)	Output of urine in 24 hours (c.cm.)	Blood-urea (mg. per 100 c.cm.)	Clearance (percentage of normal)	Clearance 1 week later (percentage of normal)
1	95/65	26	9·8	2156	43	45	110
2	118/76	48	9·5	616	71	41	65
3	112/80	95	22·8	756	33	122	—
4	116/84	90	39·0	896	43	75	85
5	120/72	44	11·0	1520	42	38	87
6	102/68	62	18·8	616	53	65	71
7	92/64	66	15·0	1176	43	125	95
8	116/70	76	22·8	812	27	85	115
9	76/50	62	22·2	2044	20	94	107
10	108/62	72	31·6	1120	56	47	87
11	112/80	58	18·1	1216	51	59	63
12	116/78	78	11·9	965	87	60	37

In most of the cases there is a moderate or even a pronounced lowering of urea clearance; after a week the clearance has usually risen to within normal limits.

One of the difficulties attending any investigation on hæmatemesis is the assessment of the severity of individual cases. The hæmoglobin percentage is of little value in this respect; but Izod Bennett and his co-workers (1938) maintain that the red cell volume per kilogramme body-weight is a satisfactory criterion when transfusion has not been carried out.

A "scatter diagram" has accordingly been constructed, showing the relationship of urea clearance to red cell volume (see figure). Although four of the cases show considerable divergence, the remainder approximate to a linear relationship. This indicates some degree of correlation, in the present small series, between the urea clearance and the red cell volume; the divergent values indicate that other factors, besides the red cell volume, influence the clearance—a finding which is hardly surprising when one considers the wide normal variation in urea clearance.

No correlation appears to exist between the urea clearance and the blood-pressure, hæmoglobin, or blood-urea.

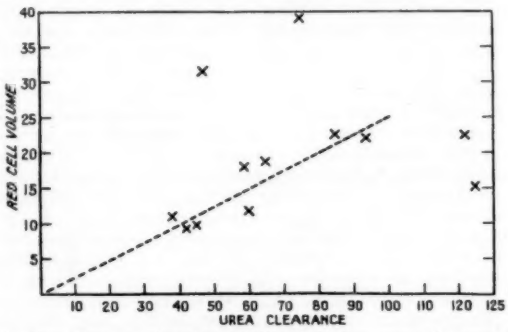
DISCUSSION

In the interpretation of results due regard must be had to the limitations of the clearance test; these are emphasised by the authors themselves (Möller et al. 1928), who state: "It is evident that the urea excretion rate is influenced by other factors in addition to blood-urea content and urine volume, and that an erroneous impression would be created by the clearance formulæ if these were assumed to express with mathematical exactness the complete effects of all factors influencing urea excretion."

Most critics of the urea-clearance test agree with Cope (1934) in emphasising the importance of two conditions originally laid down by Addis (1922, 1928). These are *diuresis* and *elevation of the blood-urea;* the theoretical basis for these conditions is the desirability of "loading the kidney" so that all the available nephrons may come into action. In the present series of cases blood-urea was usually raised, but diuresis was sometimes lacking.

The excretion of urea under conditions of oliguria is discussed by Smith (1937); he concludes that it is complicated by several factors which are neither analysable nor controllable at the present time, including tubular reabsorption, which increases in importance as the urine volume lessens. Chesley (1938) maintains that with urine volume below 0·35 c.cm. per minute the urine urea attains a constant concentration, so that the square-root formula of Van Slyke ceases to apply and the test gives unduly low estimates of renal efficiency. Fortunately, in the present series of cases, the output during the actual clearance period was higher than the mean daily output; hence, in spite of the oliguria shown in 24-hour specimens, the clearance periods showed an average minute volume of 1·04 c.cm.; it is therefore unlikely that the diminution of clearance observed is due to oliguria.

Another point to be considered is the diminished intake of food protein in hæmatemesis. Low-protein diet was observed by Cope (1933) to lead to diminution of urea clearance in nephritic patients whose renal function was not grossly impaired; this was confirmed, in normal men, by Goldring et al. (1934). There are, however, two objections to the view that the diminution of clearance observed in hæmatemesis is of this nature. Inspection of Goldring's results shows that the clearance was diminished only when the plasma urea was less than 10 mg. per 100 c.cm.; this distinguishes his cases very much from those under discussion. Moreover, Pitts (1935), in careful studies on dogs, found that the basal urea clearance could be increased by thyroxine without any increase of protein feeding; this suggests that the important factor is the rate of protein katabolism rather than the intake of protein; and there is no evidence of diminished protein katabolism in hæmatemesis.



Scatter diagram showing relation between urea clearance (per cent. of normal function) and red cell volume (c.cm. per kg. body-weight).

After every allowance has been made for low protein intake and absence of diuresis, there is still

evidence of diminished urea clearance in these cases. As pointed out by Van Slyke (1934), diminution of clearance must be due either to decreased renal blood flow or to less complete extraction of urea from the blood. There is at present no conclusive evidence to decide which of these factors is responsible, or whether both play a part. The importance of blood flow is, however, suggested by the degree of correlation between the fall in clearance and the red cell volume; and by the observation of Van Slyke et al. (1934) that the normal variations in urea clearance are more closely related to alterations in the blood flow than to changes in the urea extraction.

SUMMARY

Estimations of the urea clearance in twelve cases of hæmatemesis indicate some impairment of renal function, even when allowance has been made for the effects of low output of urine and diminished intake of protein. The fall in urea clearance appears to have some relation to the red cell volume per kilogramme of body-weight. The present evidence is insufficient to establish definitely the mechanism of renal impairment.

This work was carried out during the tenure of a Medical Research Council studentship; I take this opportunity of expressing my thanks to the Council.

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EXCRETION OF INJECTED ANEURIN (VITAMIN B_1)

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Westenbrink and Goudsmit (1937a) found that it was possible to make approximate estimations of aneurin by the thiochrome reaction in urine, using a fluorimeter, and showed that in normal individuals ingestion of aneurin by mouth is followed by a rapid excretion (1937b). We have been able to make estimations in urine by a modification of their method in which a fluorimeter is not required; and have followed the excretion after intramuscular injection, thus avoiding the effect of delay of absorption and possible loss in the alimentary tract.

METHOD

The urine was diluted so that the total volume was about 200 ml. per hour. A measured volume of this diluted urine was brought approximately to pH 4 by the addition of hydrochloric acid and shaken with 1 gramme of Clarit acid clay on an automatic shaker for fifteen minutes (Harris and Leong 1936). The clay was filtered off, washed with a little water, alcohol, and ether, and dried overnight in a desiccator over sulphuric acid. Two equal weighed samples of this dried clay, not exceeding 100 mg., were transferred to two 25 ml. glass-stoppered measuring cylinders, A and B. To cylinder A 2 ml. of methyl alcohol was added and nitrogen was bubbled through (Westenbrink and Goudsmit 1937a); then 1 ml. of 30 per cent. NaOH and 1·5 ml. of potassium ferricyanide were added. The end of the bubbling tube was temporarily withdrawn from the fluid while the volume was made up to 7 ml. with distilled water. Then 13 ml. of isobutyl alcohol was added, the bubbling tube was withdrawn from the cylinder, and the cylinder was stoppered and shaken for two minutes. The cylinder was allowed to stand for two layers to separate, and the isobutyl alcohol layer was transferred to a test-tube, shaken with anhydrous sodium sulphate to remove water and then filtered (extract A). Cylinder B was treated in the same way, except that the potassium ferricyanide was omitted (extract B). In a third cylinder C was placed 2 ml. of a solution containing 40 μg. of aneurin, and to this 2 ml. of methyl alcohol, 1 ml. of 30 per cent. NaOH, and 0·5 ml. of potassium ferricyanide were added; nitrogen was bubbled through as before, the volume was made up to 7 ml., and the thiochrome formed was extracted with 13 ml. of isobutyl alcohol (extract C). In two similar test-tubes 5 ml. of extract A (oxidised, containing thiochrome) and B (unoxidised) were compared by eye in the light of a mercury-vapour lamp, passed through a Wratten 18A filter (Karrer and Kubli 1937); B had a white and A a bluish fluorescence. Measured volumes of extract C were added to B and equal volumes of isobutyl alcohol to A, until the blue fluorescence of B appeared equal to that of A. With practice 10 per cent. differences could be detected. It was assumed that, if the tubes matched when x ml. had been added, the amount of thiochrome in 5 ml. of A was equal to that in x ml. of C, and that the amount of aneurin adsorbed on the amount of clay used was $\frac{13}{5} \times \frac{x}{13} \times 40$ μg.

The chief difficulty in the estimation of aneurin by the thiochrome method arises from the adsorption of substances other than aneurin from urine. These cause a whitish fluorescence which interferes with the comparison of the blue fluorescence of the extract with that of a standard solution of thiochrome, and also inhibit the fluorescence of the thiochrome. Westenbrink and Goudsmit excluded the possibility of incomplete adsorption from urine and demonstrated the inhibition of the fluorescence of the thiochrome. This inhibition can be seen if 5 ml. of an extract B, as above, and 5 ml. of isobutyl alcohol are taken in two test-tubes and 0·5 ml. of thiochrome solution C added to both. The blue fluorescence of the solution in pure isobutyl alcohol will be much stronger than that in the extract B, particularly if the urine used for preparing B was highly pigmented.

It should be possible to circumvent these two difficulties by the use of the compensating solution B, as suggested by Ritsert (1938). However, even with this device, the values obtained may be too low. If aneurin is estimated as described above in a sample of highly pigmented urine and in a sample of the same urine to which a known amount of aneurin has been added, the difference between the two amounts found may be under 50 per cent. of the amount added. That this is not due to failure of adsorption of aneurin by the clay was shown as follows. A concentrated urine was acidified and adsorbed with clay; weighed amounts of this clay

were placed in measuring cylinders, measured volumes of aneurin solution were added, and the aneurin was estimated as described above. When 100 mg. of clay was used the recovery of aneurin was under 50 per cent. (table I). When, however, only 25 mg.

TABLE I—RECOVERY OF ANEURIN ADDED TO CLAY WHICH HAD BEEN SHAKEN WITH URINE

Amount of clay	Aneurin added	Aneurin recovered	Per cent. recovered
100 mg.	2 μg.	0·9 μg.	45
„	6 μg.	2·4 μg.	40
25 mg.	2 μg.	2·0 μg.	100
„	6 μg.	5·0 μg.	83

of clay was used the recovery was more satisfactory. It appears therefore that either the formation of thiochrome is interfered with or some substances which inhibit the fluorescence of thiochrome are formed by oxidation besides those that are extracted in solution B.

As shown by Westenbrink and Goudsmit dilution of the urine improves the recovery of aneurin. Thus we found that only 50 per cent. of 40 μg. of aneurin, added to 50 ml. of concentrated urine, was recovered; but 70 per cent. of 40 μg. added to 50 ml. of this urine

TABLE II—EXCRETION OF ANEURIN AFTER INJECTION

Subject.	Aneurin injected (mg.)	3-hour period	Volume of urine per 3 hours (ml.)	Weight of clay used for estimation (mg.)	Aneurin excreted per 3 hours (mg.)
1	10	Before inject.	510	100	<0·04
		1st after „	345	25	2·1
		2nd „ „	400	100	0·25
		3rd and 4th	4330	100	0·07
		5th to 8th	110	100	0·05
1	Control	1st	170	100	0·02
		2nd	210	100	0·04
	3	1st after inject.	335	50	0·5
		2nd „ „	405	100	0·075
2	Control	1st	87	100	0·025
		2nd	145	100	0·035
	3	1st after inject.	74	25	1·25
		2nd „ „	100	100	0·095
3	Control	1st	320	100	0·015
		2nd	290	100	0·045
	3	1st after inject.	80	25	0·9
		2nd „ „	120	100	0·05
4	Control	1st	103*	100	0·005
	3	1st after inject.	122*	25	0·60
		2nd „ „	100*	100	0·035
5	Control	1st	278	100	0·02
	3	1st after inject.	148	25	0·66
		2nd „ „	110	100	0·03
6	Control	1st	227	100	0·02
	3	1st after inject.	124	25	0·9
		2nd „ „	118	100	0·055
7	3	1st „ „	420	100	0·75
8	3	1st „ „	375	100	0·12
9	3	1st „ „	150	100	0·6

* Highly pigmented urine.

diluted to 250 ml. with distilled water. However, we found that recovery was consistently better from urines which were not highly pigmented as passed, ranging from 80 to 110 per cent. Since all the urines in the experiments reported in table II were diluted before adsorption with clay, and since small amounts of the clay could be used when the amount of aneurin present was large, it may be assumed that the estimates of the aneurin in the urines passed after injection of aneurin are, at the worst, not more than 30 per cent. too low; although when the urine was highly pigmented and the amount of aneurin present was small, the estimates are probably very inaccurate.

RESULTS

Table II shows the excretion of aneurin by eight normal males and one normal female (No. 7) after intramuscular injection of 3 mg. of aneurin; and by one normal male after injection of 10 mg. All the subjects were eating a mixed, varied, and abundant diet; that of No. 1 included considerable amounts of brown bread. The urines were collected during three-hour periods after injection. In six cases urine was collected during similar periods on another day when no aneurin was injected.

Aneurin was excreted rapidly in the first three hours after injection; in the second three-hour period there was a relatively small increase over the amount passed in control periods. This was found by Westenbrink and Goudsmit. The amounts excreted per hour during the first three hours after injection of 3 mg. were in all but one case much higher than was found by these authors after 1 or 2 mg. taken with food. No. 2 excreted 41 per cent. of the injected dose in three hours; this may be compared with the excretion of phenolsulphonephthalein, of which over 60 per cent. of 6 mg. injected intramuscularly is usually excreted in two hours. A certain amount of the aneurin must apparently be excreted by the kidneys before there is time for it to be stored in the body. There appears to be no relation between the volume of urine and the amount of aneurin excreted. The amount of aneurin excreted by No. 8 was much lower than by the others, but no explanation was found for this.

SUMMARY

The excretion of aneurin in the urine can be estimated with sufficient accuracy to be of clinical value by the thiochrome method without the use of a fluorimeter.

A rapid excretion of aneurin takes place in the first three hours after intramuscular injection.

It is suggested that a certain amount of injected aneurin is excreted before there is time for it to be stored in the tissues.

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INTRAPERITONEAL RUPTURE OF THE RECTUM

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Lockhart-Mummery (1938) quotes the figures of M. Lindenbaum (1936), who collected 27 cases of intraperitoneal rupture of the rectum of which all but 2 were fatal. Because of the comparative rarity of this accident and its high mortality the following case is worth recording. The modern operative technique was adopted, and the patient survived.

A young farm-labourer, aged 18, was admitted to Addenbrooke's Hospital on August 11, 1938, complaining of acute abdominal pain and tenderness and suffering from severe shock. The history

elicited from friends was that while he was working in the hayfields he jumped backwards off a wagon and impaled himself upon the upright handle of a pitchfork stuck in the ground, and that about 12 in. of the handle, after perforating his trousers, entered his rectum. He did not lose consciousness but felt extremely shocked and about a quarter of an hour afterwards developed a most acute abdominal pain. His friends removed the pitchfork which had not broken and brought him as quickly as possible to hospital.

The boy had excellent physique but was gravely shocked. On admission about 1½ hours after the accident his temperature was 100·6° F., rising in an hour to 101·4° F., the pulse-rate 126, rising to 140, and the respirations 30–38. His abdomen was exquisitely tender and very painful, and there was general rigidity of the abdominal muscles. Around the anal margin were several hayseeds.

A proctoscope was passed, whereupon watery fluid was discharged from the rectum; and, although no rent in the rectal mucosa was found, it was assumed that this fluid originated from the peritoneal cavity, and that the patient was suffering from an acute generalised peritonitis following traumatic intraperitoneal rupture of the rectum. Though the outlook seemed hopeless, the patient was given morphia, and, after the shock had somewhat abated, exploratory laparotomy through a right lower paramedian incision, under ether anæsthesia, was performed.

Operation.—When the peritoneum was opened, a large quantity of foul, slightly yellow, watery fluid gushed out, but no blood or fæces. As much as possible of the fluid that remained in the peritoneal cavity was aspirated. The greater curvature of the stomach came into view, and lying on the anterior surface just above its mesenteric attachment were two hayseeds. About 15 in. of the ileum had a peculiar mottled purpuric appearance suggesting minute subperitoneal hæmorrhages, in all likelihood due to friction with the pitchfork handle. The patient was then placed in the Trendelenburg position and the rectovesical pouch explored, when an irregular tear of the peritoneum was seen extending for about an inch up the posterior aspect of the bladder and measuring 2¼ in. across its broadest part. The bladder was intact, and the perforation in the rectum could not be seen. The peritoneal rent was sutured by a purse-string suture (No. 2 catgut). A left iliac colostomy was performed and a Paul's tube inserted. A "cigarette" drain into the rectovesical pouch was brought out through the lower end of the paramedian incision. A flatus tube was inserted into the rectum and maintained by a silkworm-gut stitch. During the operation 1¾ pints of saline was administered intravenously, and drip venoclysis was continued on return to the ward. The patient was placed in Fowler's position, and morphine sulphate gr. ¼ was given four-hourly.

Postoperative care.—The flatus tube and abdominal drain were removed on the sixth day; the Paul's tube came out on the tenth day. The patient was allowed up on August 31. The colostomy acted well from the first day. The temperature fell to normal in twenty days by lysis. No gas-gangrene antitoxic serum was given.

On Sept. 13 the colostomy was closed under general anæsthesia, the spur being freed and the lumen of the gut restored by simple end-to-end anastomosis. The wound was closed with drainage. Liquid paraffin was prescribed, but no purgatives.

After this operation the patient's temperature rose to 99·4° F. on the second day and his pulse-rate to 120, when the drain was removed. He began to vomit repeatedly small quantities of fluid, and there was some abdominal distension but no pain or tenderness. A turpentine enema resulted in the passage of a small quantity of flatus only. The question arose whether there was now a mechanical obstruction or some other mischief. Mechanical obstruction due to congestion and œdema at the colostomy site after the anastomosis was thought to be most likely, and morphia was prescribed, the patient being carefully observed. On the fifth day after closure of the colostomy, when thoughts of reopening the abdomen were being entertained, the vomiting ceased and the patient had a normal bowel evacuation, and four days later defæcation was regularly established. On Oct. 2 the patient was discharged in his normal state of health.

This case supports the view that for this type of injury immediate exploratory laparotomy with adequate drainage after suture of the peritoneum is the best course.

My thanks for permission to publish this case are due to Mr. R. Weeden Butler, surgeon to Addenbrooke's Hospital, Cambridge.

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MEDICAL SOCIETIES

SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT a meeting of the fever hospital medical service group of this society, held in London on Jan. 27, with Dr. J. A. H. BRINCKER, the president, in the chair, a discussion on the

Modern Treatment of Scarlet Fever

was opened by Dr. J. V. ARMSTRONG (L.C.C.). He drew attention to the fact that scarlet fever occupied only a comparatively small place in the large field of epidemic streptococcal diseases of the upper respiratory tract, and hoped that the scope of notification might be extended so that serious cases, even if no rash was present, might be notified and sent into fever hospitals for treatment. In a brief review of the history of the disease and its fluctuations in severity, he pointed out that, although scarlet fever had been mild in the British Isles for some years, a severe type had been prevailing in south-eastern Europe.

As regards the use of scarlet-fever antitoxin, Dr. Armstrong thought that most observers were now agreed that an early and sufficient dose aborted the initial toxæmia, and by so doing put some check on subsequent invasive complications, such as otitis media and suppurative adenitis. There was, however, a dearth of controlled experiments to prove the value of serum in averting complications, and such evidence as existed was somewhat conflicting. The route and dosage of serum was important in these respects, as was shown by the work of Banks on the intravenous and intraperitoneal routes and the good results claimed by Ronaldson by the routine use of the large dose (40 c.cm. intramuscularly). The recent production of the digested concentrated antitoxin was likely to solve both the difficulty of giving adequate dosage and of serum reactions whatever the dose or route. Convalescent human serum was also used abroad and was probably bactericidal as well as antitoxic in its action. In Rumania it had had a considerable success.

The logical outcome of the noteworthy work of Brown and Allison on the mutual reinfection of patients in open wards was, said Dr. Armstrong, the nursing of all scarlet-fever cases either in separate ward units, on barrier, or in type-specific wards.

These were, perhaps, unattainable ideals, but sharp new cases, septic cases, and cases with discharges could well be isolated. Home nursing had been suggested as an alternative by some workers including Duncan Forbes, who had carried it out at Brighton since 1931 and claimed that it saved much expense and left isolation hospital beds free for other types of cases. For the system to be successful, however, the home conditions must be good and experienced medical and nursing attention must be available. When treated in hospital, patients were now discharged earlier than formerly and the modern trend was to discharge scarlet-fever patients in the third or fourth week when the infecting power of the initial streptococcal strain was thought to be at its lowest.

Recent work had also shown that doubtful cases of scarlet fever could be discharged within ten days if cultures from the nose and throat showed no streptococci. The importance of open-air treatment in the prevention of complications had been much stressed lately. In view of the fact that active immunisation, although abolishing the rash, did not completely prevent the local proliferation of the streptococcus, Dr. Armstrong doubted whether it was worth while in communities such as fever nurses, especially in view of the many other inoculations to which nurses were already subjected.

Dr. J. S. ANDERSON (L.C.C.) dealt with the employment of sulphonamide compounds in scarlet fever. He pointed out that while it was agreed that these drugs had little or no effect upon the initial toxæmia and its febrile accompaniment, there was no consensus of opinion as to their effect upon the incidence of complications. The majority of investigators were of the opinion that a combination of sulphonamide and antitoxin would probably give better results in preventing complications, and on theoretical grounds this should be the case. The hæmolytic streptococcus associated with scarlet fever produced toxin and also, by reason of its pyogenicity and invasiveness, sepsis. Hence the disease was a combination of toxæmia and sepsis. For the former, a therapeutic agent of proved reliability was already available in antitoxin. For the latter, sulphonamide appeared to be the answer. An investigation was carried out at the Grove L.C.C. Hospital in 1936 and 1937, the drugs employed being Prontosil soluble injected intramuscularly on admission and Prontosil rubrum administered orally for the ensuing week. The 417 cases were allocated to four groups. The first group received routine treatment, the second prontosil soluble and prontosil rubrum, the third antitoxin, and the fourth prontosil soluble and prontosil rubrum in combination with antitoxin. The results showed that, by itself, prontosil had no significant effect on the duration of the initial toxæmia. As regards complications, by far the worst results were obtained in the routine treatment group and easily the best in the prontosil and antitoxin group. There was a tendency for hæmolytic streptococci to disappear more quickly from the throats of prontosil-treated patients. In an investigation now proceeding M. & B. 693 was being given throughout the course of the fever and it was already evident that this form of treatment produced toxic rashes in a considerable proportion of patients.

Dr. H. S. BANKS said he was still in favour of serum treatment for all definite cases of scarlet fever admitted to hospital. It was mistaken economy to employ serum in only a small proportion of the cases admitted to open wards, for various streptococcal infections were apt to spread in such wards. On the other hand, when 90 per cent. or more of the patients in a ward had antitoxin on admission they were largely protected for at least three weeks and complications were greatly reduced. The three weeks' period of residence was important, though patients treated with serum did not need to be kept in bed for three weeks. They should be on ordinary diet in two or three days, up in a week, and could usually be discharged from hospital after about two weeks for adults and three weeks for children. With the inclusion of an aftercare scheme of urine-testing, Dr. Banks had employed this policy continuously for twelve years, and the results proved it to be in the best interests of the patient. With the new concentrated serum of Lederle there were rarely any reactions with intravenous serum. He had recently treated about 200 cases with sulphanilamide in a dose of 2–6 grammes daily, according to age, for five days from admission. The results were distinctly inferior to those in a parallel series of serum-treated cases. The initial toxæmia was uninfluenced by the drug, and heavy desquamation was common. Nephritis and albuminuria were definitely increased and probably otitis media as well.

Mr. T. B. LAYTON thought that Dr. Anderson's treatment would lead to the prevention of inflammation of the middle-ear cleft by causing an early subsidence of the swelling of the mucous membrane. He was, in theory, more in favour of the simple incision of a postaural swelling than was Dr. Armstrong, but did not think that he would be much at variance with him in any given case of this or of mastoiditis without swelling. He thought the clearing up of those cases of otitis that did not recover with the disease was the most important of all otological problems. He was convinced that the Herd treatment in ear wards was the right one. They had learnt that afternoon that in such wards there was no fear of secondary epidemics when the patients were in the third week of the disease and after. This fitted in with his own clinical experience.

Dr. SAGE SUTHERLAND (Manchester) advocated the administration of antiscarlatinal serum in every case, and referred to its prophylactic value in the prevention of otitis media, which was the most troublesome complication of scarlet fever, resulting in prolonged hospital treatment. At Monsall Hospital during the years 1934–36 an average of 5·7 per cent. of the 2000 scarlet-fever cases received antitoxin and the incidence of otitis media, excluding cases of otorrhœa on admission, averaged 6·8 per cent. During the last four months, of 590 consecutive cases, 75 received 2·2 c.cm. and 515 received 1·4 c.cm. of a highly concentrated serum intramuscularly, and the incidence of otitis media has fallen to 3·6 per cent. Serum rashes occurred in 5·5 per cent. of cases.

Dr. R. W. TANNAHILL (Waltham Abbey) described his experience with Proseptasine. Compared with serum the results were disappointing. All cases admitted over a period of six months had received 2–3 g. of proseptasine by mouth daily for a week. Compared with cases treated with serum the temperature did not fall so quickly and the rash remained longer, desquamation was much more common and there were more complications. He had now given up proseptasine and returned to serum treatment, and he had found that 10 c.cm. given intramuscularly sufficed for the average case.

Dr. J. O. MURRAY (Rochester) said that the increased liability to complications produced by segregating patients in an open ward made the admission of children suffering from scarlet fever to hospital unjustifiable unless it was possible to arrange for isolation in single cells and barriers, or

classification and isolation in two or three bed wards. The majority of cases were mild and could be dealt with at home, particularly if there were provision for free domiciliary nursing by the local authority. Severe toxic and septic cases should, of course, be admitted to hospital but these formed a very small proportion of the total. The drawbacks to isolation at home were not insurmountable, and were negligible when compared with the risk of cross-infection in open wards, a risk which always became more grave in epidemic periods.

Dr. M. MITMAN (L.C.C.) said that in the investigation at the Eastern Hospital in 1936, reported by Hogarth, benzyl-sulphanilamide and antitoxin were given to a group of cases which were controlled by two other groups, one receiving antitoxin and the other the routine treatment. Although the results in the combined group were slightly better than the other two, the difference was not statistically significant. His present views of the treatment of scarlet fever were: for mild cases treated at home, no antitoxin or sulphanilamide; for mild cases admitted to an open ward, antitoxin intramuscularly; for all moderate cases, antitoxin intramuscularly; for severe cases, antitoxin intravenously; for complications, sulphanilamide.

Dr. A. A. CUNNINGHAM (L.C.C.) said that in the United States most patients were treated at home. Those admitted to hospital were nursed for the most part in separate rooms or cubicles where the rigid Willard Parker nursing technique was still observed. Specific serum treatment was reserved for the severe cases, and two methods were in use. First, the injection of 20–100 c.cm. of convalescent scarlet-fever serum intramuscularly or intravenously; secondly the injection of 6000–12,000 units of Lederle's globulin modified antitoxin intramuscularly or intravenously. Complications were few. Otitis media, when it occurred, was reported to have responded well to Prontylin therapy by mouth. In America, both the intradermal and the conjunctival tests for serum-sensitivity were applied. A positive conjunctival test, as evidenced by the development of irritation, lacrimation and redness coming on 15–20 minutes after the instillation of one drop of horse serum diluted 1/10 into the lower conjunctival sac, was held to be an absolute contra-indication to intravenous serum therapy.

ROYAL SOCIETY OF MEDICINE

SECTIONS OF SURGERY, MEDICINE AND ANÆSTHETICS

AT a meeting of the section of surgery held on Feb. 1 jointly with the sections of medicine and anæsthetics, with Mr. C. H. S. FRANKAU, the president, in the chair, a special discussion on

Surgery in Diabetic Patients

was opened by Mr. JOHN B. HUNTER. He stated that the treatment of diabetes now lay in the complete control of the condition, and therefore many more cases were suitable for surgery than in the days before Banting's discovery of insulin. The patients requiring operation fell into two groups—first diabetics needing surgical treatment for some unrelated disease, and secondly those needing it for some complication of the diabetic state. The second class could be further subdivided into cases in which the function of endocrine glands other than the pancreas was disturbed, and cases where local sepsis was the predominant feature.

The risk of operation was to be assessed according to the patient's general condition and reaction to treatment of the diabetes. The surgeon must be guided by the physician, and continual coöperation was extremely necessary throughout. If properly prepared the diabetic was no greater a risk than the non-diabetic; he might in fact be a better risk, for he would have had an adequate period of rest and preoperative treatment, which was not always given to the ordinary patient. Similar care was essential for the two days immediately following the operation. Anæsthesia and trauma each played a large part in disturbing the metabolism. Severe trauma produced in every patient a transient rise of the blood-sugar, but in the diabetic this had great significance. If severe and prolonged vomiting developed after the operation, great care was necessary. Aggravation of the diabetes by faulty function of the pituitary gland was rare, but thyroid disease was not uncommon in diabetics (4 to 8 per cent.). Thyrotoxicosis might considerably augment the diabetic condition; the metabolic rate being increased, the patient tended to waste more rapidly because of the pancreatic defect. Alleviation of the thyroid condition brought much improvement in the general condition, though it did not cure the diabetes. The administration of Lugol's iodine immediately after operation seemed very useful.

Diabetics were extremely liable to infective lesions of the feet caused by cracks and calluses and by too close paring of corns and nails. The commonest form of lesion was a small sinus with little or no reaction round it, leading down to the cavity of one of the joints, which was completely destroyed, with sequestra in the cartilage of the base. These lesions were no doubt due to the poverty of the blood-supply. A general examination of the arterial state should be made and the pulsation of the arteries tested. Proximal examination would reveal popliteal pulsation, and examination of the radial and brachial arteries would give a guide to the degree of vascular disease. Cellulitis might involve the whole foot, and œdema might spread above the ankle. A striking fact about local septic lesions in the diabetic was their comparative painlessness. Small sequestra could be removed without an anæsthetic, but the surgeon should be very cautious in applying strong antiseptics or radiant heat.

The treatment consisted first in the control of the diabetes, but time should not be wasted on that. The aftercare of the surgical wound was important. It should be packed with sterilised boracic powder, renewed every day. After a few days a small quantity of insulin should be introduced into the depths once or twice a day. Whether pulsation was present at the ankle or not, the patient should be treated by intermittent venous occlusion, the most convenient apparatus being that of Dr. Wilson.[1] Sequestra could sometimes be removed during the daily dressings. Most of these patients were in the arteriosclerotic age, and the vascular disease was undoubtedly aggravated by the diabetes. The sepsis might pass into gangrene, even during the first few days of treatment, as a result of increased tension, the surgical incision, or the application of heat. For a severe degree of cellulitis, amputation at a high level might be called for. Mild lesions should be treated with dry dressings and carefully washed, and surgery deferred until improvement (if any) had reached its maximum. In suitable cases, toes should be amputated for osteomyelitis and gangrene. For amputation other than

1. See Wilson, C., and Ogston, A. G., *Lancet*, 1938, 1, 606.

above the knee, it was inadvisable to use a tourniquet, as the smaller vessels might be thrombosed during stasis. In old patients the diabetes was usually of recent onset, but the arterial condition was bad and delay in amputation might be fatal.

Carbuncles might reach a huge size and were rapidly detrimental. In the early stages magnesium-sulphate paste should be applied. A large carbuncle, or one which spread in spite of treatment, should be radically excised. In cases of surgical emergency, time should not be wasted in treatment of the diabetes. The diabetic was liable to abdominal cramps, which might simulate an acute abdomen, and a diabetic with acute appendicitis presented none of the ordinary signs. Acute peritonitis might simulate coma. The surgical mortality was about 12 per cent., mostly from septicæmia; the figure might therefore be reduced under the influence of new treatments.

Dr. H. P. HIMSWORTH (section of medicine) said that surgery depended on the opinion of the physician whether or not the patient could be sent up to the theatre with his diabetes balanced. If not, the surgical technique might have to be modified. An uncontrolled diabetic had thirst and polyuria, and showed the chemical signs of ketonuria, hyperglycæmia and glycosuria. Knowledge of the blood-sugar level was of little value, for it was not correlated with the clinical state. All the necessary information could be obtained from a series of urine specimens. The most important chemical sign was ketonuria, for in marked degree it showed that the diabetes was grossly out of control and that the patient was not fit for operation. The chief problem was to ensure that the patient went to the theatre without ketonuria, and the physician need know nothing more except that the patient also had a minimum amount of glycosuria. This criterion could, however, be counterfeited by starvation. To abolish ketonuria, the physician had to increase carbohydrate utilisation by giving adequate supplies of carbohydrate and insulin. When time was available, the preparation of the uncontrolled diabetic differed from the routine balancing only in one respect: he must receive an adequate amount of food from the onset—at least 1800 calories and 180–200 g. of carbohydrate. The dose of insulin should be raised until ketonuria was completely abolished and glycosuria was reduced to the minimum. Protamine insulin should not be used unless a long time were available, for lengthy observation was sometimes necessary for the correct dose to be determined. Three doses of ordinary insulin a day would control the sugar more quickly.

For minor operations under local anæsthesia, Evipan, or Avertin, no special measures need be undertaken. A major operation under a volatile anæsthetic required special preparation. The meal and insulin next before the operation should be omitted, but two or three hours before anæsthesia the patient should receive 50 g. of sugar in lemonade, and as he was put on the trolley he should be given 25 units of insulin subcutaneously. If he was on protamine-zinc insulin, and the operation was fixed for the morning, the same preparation should be given without breakfast or protamine-zinc insulin. If the operation were to be in the afternoon, he should receive the usual dose of protamine-zinc insulin and lunch should be omitted, but three hours before the operation 30 g. of sugar should be given, and 10 units of insulin should be injected as the patient went into the theatre. Ether led to postanæsthetic vomiting, which, by interfering with the intake of food, might complicate treatment. Chloroform was condemned by trustworthy authorities. Postoperative dehydration must be avoided and diabetic ketosis averted, the former by giving glucose saline and water, the latter by giving insulin. Rules should be suspended for the first two or three days. A patient who could take food by the mouth was given sweet lemonade at frequent intervals. Every specimen of urine was tested, if there were no ketones, by Benedict's solution; if the precipitate were red the patient should have 20 units of insulin; if yellow, 50; if green, 10; and if there were no precipitate he should have no insulin. He should eat what he liked.

If ketonuria were present, more carbohydrate should be given, and 25 units of insulin should be administered for each 50 g. of sugar. If the patient could not take sugar by mouth, during the first twelve hours he should have insulin according to the colour schedule; vomiting should be treated in the usual way. Ketosis should be combated by intravenous glucose saline, 1 pint an hour for two or three hours, and for every 50 g. of glucose 30–50 units of insulin should be given according to the severity of the ketosis. After twelve hours, if glucose still could not be given by mouth, more glucose saline should be injected intravenously with 25 units of insulin. The state of ketonuria determined whether an emergency operation could be undertaken at once. It was usually possible to wait six hours. If much ketosis were still present, a 10 per cent. glucose solution should be infused during the operation and afterwards until the ketones had disappeared. If during preparation severe glycosuria developed and ketonuria appeared, sepsis was probably present and operation must not be delayed. Drastic treatment would be necessary. Diabetic cramp could closely mimic a perforated gastric ulcer. The white-cell count did not help, because there was leucocytosis in all cases of marked diabetic ketosis. The distinction had no practical importance, as in neither case was the patient fit for operation until the ketosis was reduced. Prophylaxis of perforating ulcer was treatment of the callosities, and a chiropodist attached to the clinic would practically abolish it. Gangrene was nearly always precipitated by trauma or mild sepsis, and clear instruction to patients about the care of the feet would prevent much of it. In some patients its onset would be announced by intermittent claudication, deep coloration of the hanging foot, and the presence of dry, scaly skin on a cold foot. In senile gangrene, amputation was often preferable to long immobilisation.

Dr. JOHN T. HUNTER (section of anæsthetics) said that the anæsthetic agent must have the minimum effect on the hydrogen-ion concentration of the blood and on the blood-sugar. A patient who was sugar- and acetone-free would, if certain adjustments were made in the carbohydrate intake and the insulin dosage, take the anæsthetic at least as well as the ordinary patient. There was no contra-indication to small doses of morphia and atropine or morphia and scopolamine. These might be combined with one of the barbitone drugs; avertin had the advantage that the patient could be kept unconscious with nitrous oxide and oxygen alone. The intravenous barbiturates were perhaps the most useful: the best known were sodium Evipan and sodium Pentothal. Local or regional anæsthesia was the method of choice except in the presence of sepsis. Gas and oxygen, or a small dose of sodium pentothal, might also be given. Regional nerve-block caused a slight toxæmia and hence a rise of blood-sugar, and was therefore not desirable in septic cases. Diabetes was not a contra-indication for subarachnoid block. Muscular relaxation was

better, and it obviated the infiltration of the abdominal wall with large quantities of fluid. It was contra-indicated in elderly and debilitated persons whose blood-pressure was unduly low. Cyclopropane or divinyl ether might be used with advantage, especially in operations on the upper abdomen. Spinal procaine was especially useful in the shorter surgical procedures. The effect of Percaine was longer.

It was important to avoid a great fall in the blood-pressure by premedication. Morphia and hyoscine, combined with Coramine, should be given at least three hours before operation, and avertin should be given twenty minutes before the spinal block. Its careful administration in quarter-grain to half-grain doses would check the fall of the blood-pressure. The use of chloroform must be avoided absolutely in diabetes, for it caused tissue-cell destruction which impaired the glycogenic function more than any other agent. The safety and value of ether were doubtful. It was valuable if used in very small quantities as an adjuvant to gas and oxygen when the patient was well prepared. Gas and oxygen was undoubtedly the best and safest inhalant anæsthetic. There might be a slight rise in blood-sugar, but acidosis was negligible. It could be supplemented by pentothal, divinyl ether or cyclopropane; sufficient oxygen should be given to keep the colour of the patient good. It was the safest anæsthetic in the midwifery of diabetics.

Cyclopropane had superseded acetylene or ethylene in this country. It caused a slight and transient rise in blood-sugar. Excretion of urine was slowed or even suppressed, but rapidly returned to normal. An alarming fall in the blood-pressure immediately after administration, and retching and vomiting in the second twenty-four hours after the operation, might be due to too sudden a removal of the mask and therefore too rapid a drop in the oxygen concentration of the mixture. Burford had suggested the admixture of an inert gas to replace the excess oxygen. For minor surgical procedures in diabetics, cyclopropane still could not take the place of gas and oxygen. Divinyl ether was useful in small quantities for minor operations in children—e.g., the removal of lymphoid tissue from the throat—and as an adjuvant to other agents. Its effect on the blood chemistry was similar to that of cyclopropane, but it was said to be toxic to the liver in large doses. Of the intravenous anæsthetics, sodium pentothal was perhaps the best; sodium thio-ethanyl was slightly more depressing to the respiratory centre. They were excellent in diabetic cases, as their effect on the blood-sugar and the carbon-dioxide-combining power was very slight. Dr. Hunter gave a list of surgical conditions with the anæsthetics that were most suitable for each.

DISCUSSION

Dr. W. G. OAKLEY declared that in his experience the diabetes of elderly patients who came to him for surgical treatment had usually lasted for many years. It might, however, only have been diagnosed a short time before, for the patient did not suffer from the classical symptoms. Such patients came to hospital only when the arterial disease had produced gangrene or some other complication. Earlier diagnosis might do much to render surgery unnecessary in such cases. Wilson's apparatus needed extreme care, for it sometimes caused marked deterioration. It was the custom at King's College Hospital to give the patient, five hours before the operation, as much of the carbohydrate portion of his diet as possible, together with a full dose of soluble insulin, in order that the food might have time to leave the stomach before anæsthesia. From about two hours before the operation he was given 30 g. of glucose and 10–20 units of insulin. If he vomited he would still have plenty of carbohydrate in his system and the insulin would not cause hyperglycæmia.

Mr. E. C. B. BUTLER gave figures of two series of 100 patients each to show the effects of insulin treatment and how it had delayed the onset of gangrene until later life. The death-rate was far higher than it should be. He quoted evidence that gangrene was sometimes due to an anaerobic streptococcus, and asked advice for the treatment of diabetic coma following on primary arterial hæmorrhage.

Mr. C. E. SHATTOCK pleaded for periarterial sympathectomy in elderly patients with diabetes and a local septic condition of the foot, in order to increase the blood-supply.

Dr. C. G. BARNES said that in a hospital with a biochemical laboratory the alkali reserve should be estimated before operation. The blood-sugar might be normal and ketosis absent, but the carbon-dioxide-combining power might be very low. Such cases were apt to develop a severe ketosis after operation. Pregnant diabetics relatively often had a low alkali reserve and needed prolonged treatment before they could undergo a cæsarean section or induction of labour satisfactorily. In elderly fat diabetics even a large abscess might be concealed, especially in the fascial planes in the region of the hamstrings. Such patients were extremely liable to septicæmia.

Dr. C. W. MACLAY spoke of peripheral nerve degeneration as a common complication of diabetes. It might reasonably be ascribed, he suggested, to disturbance of metabolism resulting from defective nutrition of the nerves, and might account for the relative degree of anæsthesia of the diabetic. He asked whether regional nerve-block or local infiltration would aggravate it, and, if so, which one of these would be more detrimental. Cod-liver oil was sometimes used advantageously in the treatment of ulcers.

Dr. H. LETHEBY TIDY remarked with pleasure that no physician or surgeon had quoted a single foreign observer but all had spoken about their own experiences. He confirmed that the elderly surgical diabetic was usually a case of long standing. He doubted whether the results would be improved by early treatment of these cases. The arterial degeneration advanced, rather than the diabetes—which was generally mild. King Edward VII had had 4 per cent. of sugar for over twenty years and had died from an entirely different condition at seventy. Coronary thrombosis was a common cause of death. The absence of pain was generally ascribed to neuritis, but the general arterial degeneration had to be taken into account. The suggestion had been made that one of the factors was a vitamin-B deficiency, the vitamin being lost to the body in the same way as the carbohydrate was lost.

Mr. C. GRANVILLE HEY said that many resident medical officers testing the urine of a patient who had a carbuncle found a high content of sugar and jumped to the conclusion that the patient was a diabetic. Every elderly patient with a carbuncle had definite glycosuria, and insulin tended to hinder recovery. The test was sensitivity, which would mark the non-diabetic.

The PRESIDENT recalled an observation of Sir Cuthbert Wallace that some cases of glycosuria were due to gangrene or sepsis and some cases of gangrene or sepsis were due to diabetes, and that

they were entirely different conditions. In operating on a case of diabetic gangrene it was advisable to increase the alkali reserve and infuse sodium bicarbonate.

In reply, Dr. HIMSWORTH said that a correspondent in THE LANCET in 1895 had described in detail a condition he had called "sapræmic glycosuria," or high blood-sugar due to sepsis. Such patients ought to be treated as diabetics until they were cured of the cause of the sepsis, for they were, in his view, temporary diabetics.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

A MEETING of this society was held in Manchester on Jan. 13 with Prof. FARQUHAR MURRAY (Newcastle-on-Tyne), the president, in the chair.

Radium Treatment of Uterine Hæmorrhage

Dr. WILLIAM HUNTER (Newcastle) read a paper on the place of radium in the treatment of uterine hæmorrhage due to non-malignant states. Radium, he said, was invaluable in such cases, in the absence of demonstrable disease, when simple measures, including curettage, had failed to give relief. His views were based upon 150 cases of benign hæmorrhage treated with radium in the Newcastle Infirmary and followed for two years. Using a 50 mg. pencil applicator with 3 mm. silver filtration, a single dose of 1200 mg.-hours was given as routine and this gave satisfactory results in 95 per cent. of cases. There were unfavourable sequelæ in 34 per cent., but menopausal symptoms were no more severe than after a natural climacteric. The immediate mortality was nil, the only death being from pneumonia seven months after treatment.

In the discussion that followed, almost all the speakers agreed about the value of this form of treatment. The questions chiefly considered were the dosage and the advisability of using radium to check bleeding in younger women. In Dr. Hunter's view the dose given should be the smallest that would control the hæmorrhage; larger doses might increase the number of complications.—The PRESIDENT laid stress on the value of small doses in occasional cases of menorrhagia in young women—a view that did not gain support from other speakers. It was generally held that radium should not be used where there was much pain or where there were fibroids of more than seedling size.

A Split Pelvis in Labour

Dr. STANLEY WRIGHT described a case of labour associated with ectopia vesicæ and split pelvis. The patient was a primigravida 25 years old, of average height and build, but with the secondary sexual characteristics poorly developed. She had well-marked ectopia vesicæ. The urethral orifice was large and it was through this orifice that coitus had been taking place, the hymen being intact. Insemination had resulted from coitus interruptus. The skiagram showed about 2 in. of separation of the pubic bones; the sacrum was thrust forwards by the iliac bones, there being only about 1½ in. between the posterior superior iliac spines. It was said that in extreme cases these points might become so approximated that the bones seemed to enclose a cavity behind rather than in front—the so-called inverted pelvis. The patient was admitted at the 32nd week, and unexpectedly went into labour a fortnight later, and was completely delivered an hour from the onset of labour. The condition, said Dr. Wright, was of interest since it demonstrated that the pressure of the femora on the pelvis is not inwards—for this would approximate the two halves of the pelvis—but upwards.

Prof. DANIEL DOUGAL (Manchester) described a case of chronic hypertrophic vulvitis following childbirth, for which no cause other than the trauma of labour could be discovered.—Mr. GLYN DAVIES (Sheffield) reported a case of regional ileitis complicating dysmenorrhœa in which he resected a segment of the terminal ileum measuring 8 in.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY

A MEETING of this society was held on Jan. 26, with Dr. R. R. TRAILL, the president, in the chair.

Neuromyelitis Optica

Dr. C. J. FULLER and Mr. RANSOM PICKARD jointly described two cases of Devic's disease, one of which was shown.

The patient, a girl of 11, was admitted to hospital on Dec. 19, 1938, having been perfectly well until three days before, when she complained that she could not see. The deterioration in vision had become progressively worse and in 24 hours she was completely blind. There was also some slight frontal headache. On admission it was found that both optic fundi were normal. The pupils reacted slightly to light and more particularly to light thrown on the left side of each retina. There was some weakness of the right internal rectus, but the other cranial nerves were normal. There was no loss of power in the upper extremities, but both biceps-jerks were absent. The left triceps-jerk was present but the right was absent. There was no ataxy, the knee-jerks were present, but the ankle-jerks were absent and the plantar reflexes flexor. Sensation was normal and the abdominal reflexes were present. There was no Kernig's sign or head-retraction. The cerebro-spinal fluid showed 12 lymphocytes per c.mm. and the protein was 60 mg. per 100 c.cm. A week later some muscular weakness was noted on the left side of the face, in the left arm, and in the left leg, and there was an extensor plantar response on the left side. After another three weeks the left hemiparesis had improved and the patient, for the first time since the onset of the illness, was able to recognise the colour of a cup held in the hand. She could also recognise fingers held 18 in. in front of her eyes. The condition somewhat deteriorated during the next week; the hemiparesis increased and the patient was once more unable to see a light held in front of her eyes, but during the following fortnight there was steady improvement. At the time of report the child was able to recognise faces and the hemiparesis had almost disappeared.

Dr. Fuller contrasted the apparently favourable prognosis in this case with that in another patient, who was too ill to be shown. This was a woman aged 50, admitted to hospital on Dec. 24, 1938. Three weeks previously she had found herself unable to see when looking to the right. Two days later she developed acute retention of urine and it was found that she had a paraplegia extending up to the level of the third thoracic segment, with complete sensory loss below that level. There was also a right homonymous hemianopia but the discs were normal. The cerebro-spinal fluid contained 32 lymphocytes per c.mm. and protein 95 mg. per 100 c.cm. The Wassermann reaction was negative.

REVIEWS AND NOTICES OF BOOKS

Secondary Gastro-intestinal Disorders; Reciprocal Relationships

By JULIUS FRIEDENWALD, M.D., professor emeritus of gastro-enterology, University of Maryland school of medicine; THEODORA H. MORRISON, M.D., clinical professor of gastro-enterology in the school; and SAMUEL MORRISON, M.D., assistant professor of gastro-enterology in the school. London: Baillière, Tindall and Cox. 1938. Pp. 251. 13*s*. 6*d*.

IT was a happy idea to collect and survey the gastro-intestinal symptoms which arise in diseases whose centre and seat lie outside the gastro-intestinal tract, and to discuss along with them the disturbances of non-alimentary functions which are produced by alimentary-tract disease. These "reciprocal relationships" link the gastro-intestinal tract with heart disease, pulmonary tuberculosis, liver and gall-bladder, the urinary tract, the female pelvic organs, the endocrine glands, the anæmias, the nervous system and the neuroses, the skin, and the eye. Those are the main chapter headings of this book. The matter of it is derived from the authors' own experience, from which case-records are quoted by way of illustration, and from an extensive study of the literature. It is full of interesting and valuable observations, but the student and the general practitioner, for whom it purports to be written, will find difficulty in seeing the wood for the trees. A closer and more critical inquiry into the physiological basis of these reciprocal relationships would have given the book greater cohesion and greater value, though the answer to such an inquiry would often be "we do not yet know." At times the authors are content with a superficial pseudo-explanation. "The intimate relationship between disturbances of the genito-urinary organs and those of the gastro-intestinal tract are accounted for," they say, "partly by the anatomic relations between these systems and their nerve and blood supply, and in a large degree by developing toxemias"; but they do not define the reflexes involved or identify the toxins.

The book is to be recommended, however, as a painstaking collection of clinical observations, any group of which, as well as being of interest to the clinician, might well be the stimulus and starting-point of a profitable physiological investigation.

British Encyclopædia of Medical Practice

Vol. X. By Various Authors. Under the general editorship of Sir HUMPHRY ROLLESTON. London: Butterworth and Co. 1938. Pp. 731. 35*s*.

THIS volume opens with a consideration of the medical aspects of poisons legislation by Hugh N. Linstead, and ends with an article on rosacea by A. C. Roxburgh. Among the eleven articles on psychological medicine must be mentioned Emanuel Miller's on the psychiatry of children, in which the scope and potentialities of this vast subject are outlined as fully as is possible in ten pages. Miller points out that whereas the general principles of psychotherapy hold good for children as for adults, certain modifications of technique are necessary in those cases in which the mental mechanisms involved render suggestion and persuasion relatively useless. He attaches great importance to the analysis of play and adds that it is often necessary to subject the parents of psychotic children to careful psychiatric scrutiny if success in treatment is to be achieved. Other important contributions in this sphere are Edward Glover's on psycho-analysis and R. D. Gillespie's on psychoneurosis, to which P. Manson-Bahr has added a section on neurasthenia in the tropics. In the neurological sphere, F. M. R. Walshe's article on reflexes in diagnosis, which explains the significance of reflex abnormalities, should be useful to the general practitioner.

General medicine is typically represented by J. M. O'Donovan's article which tackles the constantly recurring diagnostic problem of obscure pyrexia. The contention that there may be many persons with "habitual hyperthermia" is comforting but has its dangers in that it may lull the clinician into a false sense of security. S. P. Bedson and Donald Hunter combine to produce a full account of psittacosis, in which disease, though the treatment is still prophylactic and symptomatic, the prognosis is by no means hopeless. The special departments of surgery are represented by articles on retinal disease by R. C. Davenport, and on rhinoscleroma by Lionel Colledge. Kenneth Walker deals with surgical methods of rejuvenation; he discusses the rationale and results of the Steinach and Voronoff operations and ends with a note on the present and future possibilities of the endocrine treatment of premature senility. Psoriasis, the successful treatment of which remains one of the perpetual enigmas of general practice, is optimistically discussed by John T. Ingram, who considers that prognosis depends to some extent on the prompt and efficient treatment of each attack, particularly the first, and on aftercare. F. J. Browne contributes a long article on normal and pathological pregnancy. The article on the puerperium by A. Leyland Robinson and R. M. Fry contains many counsels of perfection not always attainable in domiciliary midwifery.

The high quality of the plates and illustrations in this series is fully maintained in the present volume.

Introduction to Industrial Mycology

By GEORGE SMITH, M.Sc., A.I.C., research demonstrator, department of biochemistry, London School of Hygiene and Tropical Medicine. London: Edward Arnold and Co. 1938. Pp. 302. 16*s*.

THE subject matter of this book forms part of a course of lectures given at the London School of Hygiene to students reading for the postgraduate diploma in bacteriology. It is not primarily concerned with micro-organisms found in disease in man, but it nevertheless contains much of value to the medical reader and especially the bacteriologist. Most of us are quite unaware of how extensively the scientific use of moulds has come to replace the old hand methods in industry. Thus, Prof. Raistrick points out in his foreword that citric acid, until this century obtained exclusively from the juice of citrus fruits, is now being made on a wholesale scale by growing *Aspergillus niger* on sugar solutions, and that the exploitation of bacteriology in such ways is leading not only to a new technical branch of the subject but is also developing a fresh aspect of biochemistry in studying the changes, almost bewildering in their diversity, which are brought about by the growth of moulds.

The author uses the term mycology in its modern sense as being concerned only with the eumycetes or true fungi, and the medical reader will be interested in his clear and systematic way of dealing with terminology and classification. In describing the moulds medical textbooks are still apt to be confusing

in their use of old nomenclatures and somewhat primitive diagrams and pictures. This book follows the international rules of botanical nomenclature and even gives information to the bewildered student on the pronunciation of the different botanical names created by terminologists skilled in the use of Latin genitives. After describing seriatim the various moulds used in industry, with exceptionally good illustrations, Mr. George Smith gives an account of laboratory equipment and technique including methods of cultivating moulds and controlling their growth. This is followed by a section on the use of fungi in such industrial processes as alcoholic fermentation, the ripening of cheese, the production of glycerol, the syntheses of fats and proteins and the manufacture of Marmite, ergosterol and other vitamin products. Finally the author includes a bibliography with a short description of the salient contents of the books listed.

All bacteriologists will find this a valuable reference work not only for the information it contains but for the way in which it clears the ground of obsolete classifications and of the vague and inadequate descriptions of moulds which still find a place elsewhere. We hope that it will lead to a similar clarification of medical mycology.

Synopsis of Physiology

(3rd ed.) By A. RENDLE SHORT, B.Sc., M.D., F.R.C.S., professor of surgery, University of Bristol; and C. L. G. PRATT, M.A., M.Sc., M.D., demonstrator in physiology, University of Oxford. Bristol: John Wright and Sons. 1938. Pp. 325. 10*s*. 6*d*.

THE new edition of this little book contains many small additions which bring it up to date. Such synopses have their uses for the rapid revision of a subject and for the provision of subject-headings, and this book fulfils these needs very completely. As an aid to "the practitioners who wish to keep abreast of modern physiology," however, this type of book is less suited, for it has to presume the reader's knowledge of the facts of which it provides a summary.

Yearbook of the Eye, Ear, Nose, and Throat

Edited by E. V. L. BROWN, M.D., professor of ophthalmology in the University of Chicago; LOUIS BOTHMAN, M.D., clinical professor of ophthalmology in the University; and SAMUEL J. CROWE, M.D., professor of otolaryngology in the Johns Hopkins University. London: H. K. Lewis and Co. 1938. Pp. 630. 10*s*. 6*d*.

Dr. S. J. Crowe has taken over the editorship of the ear, nose and throat sections of this well-known yearbook. It contains, like its predecessors, a large number of abstracts from the world's literature and reports of cases of interest. Among the articles of 1938 summarised is one by A. J. Wright stating his belief that aural vertigo is due to a "focal labyrinthitis," one or more foci of infection being found in all his cases; in the treatment of this affection T. J. Putnam advocates an intracranial approach to the superior semicircular canal through the upper surface of the petrous bone, and destruction of the labyrinth by electrocoagulation by means of a wire introduced into the canal. J. Lempert's endaural method of surgical approach to the mastoid and temporal bone generally is described. The harmful effect of the intranasal use of antiseptics and oils is stressed in several papers. In radiography of the larynx A. Gunsett finds that the method of tomography at a depth of 2 cm. shows various pathological changes clearly; in most cases, of course, the lesions can be better seen by the ordinary methods of examination, but in carcinoma of the larynx tomography affords valuable information on the extension of the tumour. In the section on the eye many rare and interesting conditions are recorded. There are two favourable reports, by L. J. and R. F. Fernandez and by T. Willis, of a few cases of gonorrhœal ophthalmia treated with sulphanilamide. From his experience of seven cases A. E. MacDonald considers staphylococcus toxoid a valuable remedy in the treatment of recurrent styes.

There is a full index of subjects and of authors, which enhances the value of this useful guide to current literature.

Dietetics in General Practice

By LESLIE COLE, M.A., M.D. Camb., F.R.C.P., physician to Addenbrooke's Hospital, Cambridge; examiner in pharmacology, University of Cambridge. London: John Bale, Sons and Curnow. 1938. Pp. 150. 6*s*.

MUCH claptrap is talked and written about dietetics, whence it is refreshing to read Dr. Cole's little book which, if it cannot pretend to any particular originality, is free from faddery. The book is remarkably comprehensive. Normal diet, common dietetic faults, diet in cardiovascular and gastro-intestinal diseases, in genito-urinary and metabolic disorders and in anæmia and acute infections, are all compactly considered. The importance of sound teeth and the diet suitable to ensure their development are matters wisely stressed. High-residue diets for the treatment of one type of constipation are given but no reference is made to low-residue diets suitable for constipation of the spastic type. In cases of inoperable carcinoma of stomach the author advocates a diet on the lines suitable for the treatment of gastric ulcer but offers no suggestions as to how the profound anorexia, so characteristic of this condition, is to be overcome. There is much good sense in Dr. Cole's remark that when treating any case of renal disease it is well to ask oneself whether the restrictions are worth while. There is a useful note on infant feeding. General practitioners, especially young ones, will be wise to slip a copy of this little book into their pockets.

Petite chirurgie et technique médicale courante

By G. ROUX, professor attached to the Faculty of Medicine, University of Montpellier. Paris: Masson et Cie. 1938. Pp. 591. Frs.120.

INTENDED for students and medical practitioners, this book covers not only the generally recognised field of minor surgery but includes chapters on the minor procedures commonly required in such special fields as gynæcology, ophthalmology, and oto-rhino-laryngology. It also describes the technical details of examinations of the blood, and of the collection of specimens for laboratory examination. The section on fractures is well illustrated, and on the whole adequate, but it is doubtful whether the treatment of fractures of the spine by reduction and fixation in a plaster corset should find a place in a book on minor surgery. The chapter on minor urological surgery is particularly good and contains just the practical information so often wanted and so often wanting. Some of the procedures advocated differ from the usual practice in this country but even so the book is one which in its present form or as a translation could usefully fill a place in the English practitioner's library.

THE LANCET

LONDON: SATURDAY, FEBRUARY 11, 1939

THE NEW OUTLOOK IN PNEUMONIA

AMONG many extensions in the scope of chemotherapy for bacterial infections since the advent of Prontosil in 1935, the introduction of 2-sulphanilyl-aminopyridine (M. & B. 693) for the treatment of pneumonia is by far the most important. Of all acute and severe infections by pyogenic cocci, pneumonia is the commonest and causes the largest number of deaths; a remedy for it is calculated to preserve more lives than are destroyed by streptococci, or indeed any other micro-organism now influenced by specific treatment. This drug has been available only since last summer, and it is not surprising that so far there have been few reports on its effect in any large series of cases, although many who have used it have become convinced of its value. Clinical trials are proceeding in several other parts of the world, including France and the United States, and accounts of some of them have lately reached us from Kenya and South Africa. In our last issue Drs. FARNWORTH ANDERSON and DOWDESWELL reported on 50 cases treated at Nairobi with results of the kind we have been led to expect; there was only 1 death in the series, compared with 8 in a control series of the same number, and the duration of fever and of the necessary stay in hospital were both considerably reduced. The South African report by Drs. AGRANAT, DREOSTI, and ORDMAN, most of which appears this week, is based on a larger experience but is less easily interpreted since there are racial and other differences between various groups in the total of 550 cases, and complicating factors of occupation and previous immunisation with vaccine. Although the results generally were good, they might well have been better had the drug been given without waiting for the diagnosis to be verified by unequivocal physical signs. Extensive though not complete bacteriological studies were made in both these series of cases, and they lend no support to the idea that any of the many types of pneumococcus now recognised is resistant to the remedy. On the other hand little is yet known of the action of M. & B. 693 on other bacteria (except *Streptococcus pyogenes*) that may be concerned in pneumonia, and the fact that *Staphylococcus aureus* was found in the sputum in 3 fatal cases may indicate a type of infection in which benefit cannot be anticipated.

The general impression conveyed in these carefully analysed and moderately worded reports, as well as by earlier ones like that of GAISFORD and EVANS,[1] is that for the ordinary case of pneumococcal pneumonia M. & B. 693 is a specific remedy, fully adequate in itself, and needing no help from others. Serum was given to none of these patients, and there is no suggestion that its further use is contemplated. Serum treatment has certainly received a severe setback, and its future is an unknown quantity of no little interest. Vast efforts have been made and millions spent in the United States to perfect and extend it; the definition of the higher types of pneumococcus and the provision of useful therapeutic sera for many of them, the introduction of the more effective rabbit sera, facilities for rapid typing, and an insistent educational campaign—all these have been features of a crusade against pneumonia which is perhaps the biggest effort ever made for the specific treatment of any disease. Is all this to end in nothing? This we shall not know until M. & B. 693 has shown what it can do in the more severe form of pneumonia which occurs in America. As far as this country is concerned, although FLEMING[2] on theoretically unassailable grounds strongly advocates combined immunotherapy and chemotherapy, it seems unlikely that serum will be used except in cases with a serious prognosis from the onset. The limited demand for serum which this entails will not encourage progress in its manufacture.

That the availability of serum, at least from commercial sources, depends on a reasonable demand for it is a fact to be borne in mind in basing any future hopes on the paper by Dr. LOEWENTHAL which we published on Jan. 28. In treating experimental streptococcal infection in mice he showed that serum plus sulphanilamide is more effective than either alone; but it would be rash to look for similar success in treating human infections with a combination of sulphanilamide and any antistreptococcal serum now available. The serum used in his experiments was prepared by immunising rabbits with the type 13 streptococcus employed for inoculating the mice, and its protective power was of a high order, unapproached by that of either antitoxin or any so-called polyvalent antibacterial serum. No such type-specific serum is available for clinical use, and although LOEWENTHAL sees no insuperable difficulty in its preparation for each of the 30 or more types of *Streptococcus pyogenes* now recognised, it is doubtful whether this complex task will ever be undertaken. Apart from the fact that chemotherapy alone is so often successful as to restrict the absolute necessity for serum to a minority of fulminating cases, it must be remembered that streptococci cannot like pneumococci be typed in a few minutes or hours. This added drawback of inevitable delay might well turn the scale against serotherapy even were anyone enterprising enough to manufacture the necessary sera. The only situation in which treatment with type-specific serum is at all likely to be applied is an epidemic due to a known single type of streptococcus, against which a serum might be prepared in time for the treatment of the later cases.

1. Gaisford, G. M., and Evans, W. F., *Lancet*, 1938, **2**, 14.

2. Fleming, A., *Ibid*, p. 74.

CLUBBING

IT has always seemed strange that clubbed fingers should be found in so many widely differing diseases, some of which have nothing else in common. Cases of pulmonary suppuration, infective endocarditis, congenital heart disease with cyanosis, aortic aneurysm, chronic diarrhœa, biliary cirrhosis and post-thyroidectomy myxœdema are all reported to have shown clubbing of the fingers, and a hereditary type unassociated with ill health is also described. Although the deformity of the terminal phalanx may differ in degree from case to case the essential abnormality remains the same—namely, an overgrowth of the soft tissues of the nail-bed. The most striking instances are the gross cyanotic "drumstick" fingers found in congenital heart disease and in severe chronic disease of the lung, where the hypertrophy involves also the pulp and expands the whole finger-tip. The salmon-pink clubbing sometimes accompanying fatty diarrhœa and the many less conspicuous variations that arise in other diseases all show the diagnostic obliteration of the normal angle between the base of the nail and the finger, which LOVIBOND [1] has named the "profile sign."

Although it might not have been expected that the nail-bed would react in the same way to such diverse conditions it is probably true that all clubbed fingers are anatomically similar. Hence it is plausible to assume a single mechanism for every case, and some recent experiments on the vascular supply of the digits provide a clue to its nature. WILKINS, DOUPE and NEWMAN [2] have shown by plethysmographic methods that the blood-flow to the terminal phalanx when the vessels are dilated is appreciably greater than to the middle phalanx of the finger. GRANT and PEARSON [3] provide further evidence that with the peripheral vasodilatation caused by warming of the body the blood-flow to the finger is greater than the flow to the hand, and the flow to the hand greater than to the forearm. Therefore there is at least this selective function by which the terminal phalanx normally differs from other parts of the limb. That clubbed fingers differ from the normal has been proved experimentally by means of estimations of skin temperature (MENDLOWITZ [4]). The response of their blood-vessels to environmental temperature changes was qualitatively the same; yet when, by raising body temperature, sympathetic vasoconstrictor tone was removed from the fingers the rate of blood-flow through the terminal phalanx was found to be abnormally great. Likewise the fall of blood-pressure from the brachial to the digital arteries was abnormally small. These observations were found to apply only to the symmetrical clubbing secondary to pulmonary disorders or congenital heart disease; in cases of hereditary clubbing the pressure gradients were normal, and with unilateral clubbing no significant changes in the blood-flow or pressure gradient could be demonstrated. MENDLOWITZ suggests however that in bilateral and in unilateral clubbing the mechanism is fundamentally the same—namely, an increased circulation in the finger-tips—but that it is obscured in unilateral cases by complicating factors such as nerve lesions.

The significance of these experiments is that it is no longer necessary to postulate a morbid process that acts selectively on the finger-tips; for their vascular supply is already peculiar in health. Hence, if in these diseases a general disturbance of the vascular bed throughout the body could be demonstrated it would still be compatible with different or exaggerated effects in the extremities.

1. Lovibond, J. L., *Lancet*, 1938, **1**, 363.
2. Wilkins, R. W., Doupe, J., and Newman, H. W., *Clin. Sci.* 1938, **3**, 403.
3. Grant, R. T., and Pearson, R. S. B., *Ibid*, 1938, **3**, 119.
4. Mendlowitz, M., *Ibid*, 1938, **3**, 387.

TREATMENT OF ACUTE OSTEOMYELITIS

THE question of the best treatment of acute osteomyelitis is as actively debated in America as in this country. Addressing the section of orthopædic surgery of the American Medical Association last summer,[1] J. A. KEY said he has no patience with the argument that the focus in the bone is merely incidental and should be left alone while attention is directed to treatment of the septicæmia. These patients, he maintained, were not ill until the bone focus developed, and they are now ill because they have a spreading infection in the bone which is pouring toxins and possibly bacteria into the circulation. The rational treatment, as he sees it, is to drain the primary focus. The discussion that followed KEY's paper emphasised the real difficulty. Children over the age of two years are certainly suffering from a septicæmia which is staphylococcal in origin, and it is extremely doubtful what is the correct therapy for staphylococcal septicæmia. Some success has been reported in a small series of cases treated with Uleron,[2] but apart from chemotherapy non-operative treatment seems to be largely a matter of waiting to see what the patient's own reaction to the infection will do. The exponents of conservatism suggest that any interference with the bone may spread the infection and that any operation will lower the child's resistance. J. C. WILSON said that early drainage had in his experience raised the bacterial count in the blood, but we do not know enough about septicæmia to be sure that this necessarily meant that the child was more ill.

The strongest argument for the surgeon holding his hand in the first few days is that cases seen late often do well. An abscess forms under the periosteum, and drainage of this abscess is followed by a smooth convalescence. Cases are also reported from time to time that have recovered without drainage, though there will always be difficulty in persuading other surgeons that such a case was truly one of osteomyelitis. As the disease is admittedly blood-borne there is no essential reason why some drug might not counteract the infection in the bone as well as in the blood. KEY's contention, however, is that this argument starts from a false premise. The infection is carried to the

1. *J. Amer. med. Ass.* 1938, **111**, 2163.
2. Mitchell, A., *Brit. med. J.* 1938, **2**, 1200.

bone by the blood, he says in effect, but there would be no dangerous septicæmia if the bone focus did not develop and throw out its toxins into the circulation. Bone is very nearly incapable of forming a natural barrier to the spread of acute infection, so there is no true analogy with carbuncles and other foci of acute staphylococcal invasion in soft tissues.

Probably no surgeon would go so far as to say he would never operate on any case of acute osteomyelitis; but there seem to be many who wait until pus actually presents under the periosteum or even in the subcutaneous tissues. Have these surgeons given enough reason for their belief that operation on the bone is in itself dangerous? Such operation is not open to the objection that one is cutting across barrier tissues and opening new channels for the spread of septic emboli, as may happen in incising a carbuncle. An extensive guttering may cause great shock in a very ill child, but drainage of the bone can be done with a gentler technique, and modern anæsthesia should not itself cause more than a very little disturbance. WINNETT ORR'S method of packing with soft paraffin and encasing the limb in a closed plaster-of-paris splint is designed to obviate further trauma and exhausting dressings. Good results are undoubtedly being obtained from delay in operation, and in very toxic cases J. T. NICHOLSON [1] reports a mortality of 34 per cent. from immediate operation and of 11 per cent. where operation was delayed. Unfortunately there is no real comparison between any two groups of cases, for one group may consist of poorly nourished children who seem to put up no resistance at all to the septicæmia, and the other of sturdy children who would survive the most virulent infection. Where there is such variation it is exceedingly hard to prove statistically that the method of treatment influences the outcome. Osteomyelitis is now rather rare in this country and there is a danger of competent surgeons arriving at too definite conclusions from success in a few cases.

PLANNING IN ORTHOPÆDICS

Sir ROBERT JONES defined orthopædics as the treatment by manipulation, operation, re-education and rehabilitation of the injuries and diseases of the locomotor system. The definition, if cumbersome, is accurate and makes it clear that orthopædics is more than a branch of surgery, just as ophthalmology is greater than ophthalmic surgery; indeed, surgical treatment is a small component of what it embraces. The orthopædist does not wait until the patient or his parents seek advice, for in their early stages many crippling conditions give rise to little pain or disability; arrangements must be made to seek out the affected child, and this is where supremely valuable preventive work may be done. Facilities for outpatient treatment of minor disorders must be widely available, and this is best done through a system of clinics centred on a hospital. At the hospital itself, which is reserved for the more serious cases, an ample number of beds must be provided, for the duration of treatment is often lengthy. On discharge the patient is again sent to the local clinic, perhaps for the completion of his treatment, or for rehabilitation, or simply for supervision. Finally there is the training school for those so severely crippled that they cannot, without special training, hope to earn a living under the ordinary conditions of modern life.

It is therefore not surprising to find that orthopædic surgeons have a taste for planning; it is part of their business. Anyone who has worked in London very quickly finds out the meaning of lack of coördination. There, as in most large cities, it is not so much a matter of providing the necessary services as of coördinating those that already exist. A child attends a voluntary hospital where, without reference to any outside body, an orthopædic department has been started. The child is admitted and operated on. Recovery is slow and the surgeon, with only a few beds at his command, disposes of the child by sending him to a country orthopædic hospital where the treatment is completed. But it is found on discharge that he is not fit to attend an ordinary school, and he is therefore sent to a cripple school where periodic inspections are made by yet another surgeon. There is no continuity of treatment or unity of control. This sort of thing, while by no means the rule in our large cities, is far too common, and there is undoubtedly much waste through needless duplication of services. Mr. HARRY PLATT'S solution [1] is a unified orthopædic scheme arranged under the ægis of a joint hospitals advisory board. Such a board exists in Manchester, and what is more important all the constituent bodies, both municipal and voluntary, have agreed that it shall control future hospital policy. But even this is not enough. Many features of the complete orthopædic scheme would hardly fall within the jurisdiction of a joint hospitals board; such, for example, as outpatient clinics, schools for physically defective children and rehabilitation centres. To coördinate these manifold activities one man is needed—a senior orthopædic surgeon, with a flair for organisation and the ability to advise effectively. This is Mr. PLATT'S ambition for Manchester, and we cannot but agree that in work of this kind organisation and coördination ought to transcend parochial interests and areal restrictions.

Still more romantic planning is that of Prof. G. R. GIRDLESTONE [2] who visited South Africa last year at the invitation of the Nuffield Fund. He was asked to draft the outline of a complete orthopædic scheme for the Union: a scheme for nearly ten million people, a fifth of them of European origin, scattered irregularly over a country the size of France and Spain. The problem has been tackled on a federal basis: that is to say, although most of the work will be done by provincial administrations, a powerful central council will give guidance in matters of policy. Prof. GIRDLESTONE assumes that the surgeons concerned will

1. Platt, H., *Med. Offr*, Jan. 14, 1939, p. 15.
2. Draft Outline of a Complete Orthopædic Scheme for the Union of South Africa.

be paid for their services. The orthopædic surgeon, he remarks, finds most of his patients among the poorer sections of the community, and in Africa his work will be specialised in a way totally unfamiliar to most of us. The inpatient work in the orthopædic departments of general hospitals and in orthopædic hospitals will be like our own, but the "feeder" services—i.e., clinics, small town hospitals and mission stations—will be scores or hundreds of miles apart. It is proposed to make highly trained nurses responsible for this part of the work between the surgeon's periodic visits—what might be called the Oswestry or Oxford system, geographically magnified. Such a scheme, to work efficiently, must be in the hands of skilled men and women who will have to sacrifice much of their home life, and should be remunerated accordingly. The Union must be prepared to spend a considerable sum of money; Lord NUFFIELD'S gift of £100,000, generous as it is, can do no more than set up part of the machinery: it was not in fact intended to do more. Considered purely as a business affair however orthopædics pays; there is no branch of surgery in which so much can be done to restore patients to happy usefulness. Infinite patience and devoted work will be needed to provide the four provinces with a comprehensive orthopædic service. But it is only a hundred years since the Voortrekkers crossed the Drakensberg, and while their descendants may have lost the contentiousness that divided them, the spirit of the pioneers remains. We shall watch with keen interest the work develop.

ANNOTATIONS

SEXUAL PERIODICITY IN MAN

MANY animals show seasonal changes in reproductive activity, and in the great majority of these the principal stimulus appears to be light, an increase in illumination being followed by increased sexual activity. Temperature may not affect reproduction, and mice, for instance, will continue to breed normally if kept at 0° C. Nevertheless some birds and mammals show seasonal variations in breeding activity which, as in tropical species, can hardly be due to changes in illumination, and there is no doubt that factors other than light may condition reproductive processes.

Whitaker,[1] in reviewing the evidence for seasonal sterility among the Eskimos, is unable to uphold the older reports—notably those of MacDiarmid and Cook—that sexual functions cease during the long arctic night. He quotes the figures of Bertelsen [2] who analysed 16,101 births occurring between 1901 and 1930 in west Greenland and found that more conceptions take place in December and April than at any other time. Adjusted to a basic average of 100 per month, each of these peak months showed 113 conceptions, as opposed to 85 conceptions in August, the month with the lowest conception-rate. From June to October inclusive the conception-rate was below the average; for the rest of the year it was equal to or above it. Bertelsen believes that the high figure for December is due to the Christmas celebrations, and that for April to the return of spring. These observations lend some support to the thesis of Huntingdon [3] that there is in man a "basic animal rhythm" which is so adjusted that the young are born at a time when their chances of survival are greatest. Huntingdon concludes that reproductive rhythm in man depends primarily upon temperature and that the optimal mean diurnal temperature for conception is 62° F. Factors such as diet and sunlight are thought to be of secondary importance. At a meeting of the Royal Society of Edinburgh last July W. P. Kennedy gave an account of the seasonal incidence of conceptions in Scotland, based on data for 1880–1935. He finds that the lowest conception-rate is in winter and the highest in summer, and that a correlation exists between conception-rate and temperature, the mean monthly temperature and the number of conceptions per month rising and falling together. We are led, therefore, towards the conclusion that such reproductive rhythm as exists in man is dependent upon temperature and not upon illumination. But as the sun supplies both heat and light together, and is only one of the sources of them available for even semi-civilised man, it is difficult to assess their effects either alone or together in such material as that on which these analyses are based. In the Eskimos the discrepancies between the older data and those now available may depend on the progress of arctic civilisation. The effect of better living conditions on the age at menarche of Eskimo women is discussed by Mills,[4] who shows that in many races the onset of sexual functions is becoming progressively earlier, and believes that this may have happened with the Eskimos. A comparison of the average menarchal age given by MacDiarmid (about 23), Cook (19–20) and Bertelsen (15½), the observations being made in that order about a hundred, fifty, and four years ago, certainly suggests it.

Considerably more information is needed about such factors as seasonal variation in marriage-rates, the use of contraceptive methods, and the effects of economic conditions on the conception-rate, before such a correlation as that of temperature with human fertility is accepted at its face value. Although there may be a definite correlation between the two, this would by no means prove that the one is the cause of the other.

1. Whitaker, W. L., *Science*, 1938, **88**, 214.
2. Bertelsen, A., *Medd. Grønland*, 1935, p. 117.
3. Huntingdon, E., Season of Birth, London, 1938.

CHANGING PROBLEMS IN FOOD ANALYSIS

IT is interesting to compare the present trend of food examination, as described by Dr. H. E. Cox,[5] with the methods of examination and substances looked for in a work written by Rowland J. Atcherley [6] in 1874. In the nineteenth century the main task of the analyst was the detection of gross adulteration and Atcherley's list of adulterants likely to be found in butter, for example, included water, salt, silicate of sodium, chloride of calcium, starch, mashed potatoes, flour, rag-pulp, gelatin, beef and mutton suet, and various other fats both animal and vegetable. Nowadays the addition of "improvers" and preservatives has taken the place of gross adulteration, and

4. Mills, C. A., *Science*, Jan. 6, 1939, p. 11.
5. Chemical Analysis of Foods. By H. E. Cox, D.Sc., Ph.D., public analyst for the Borough of Hampstead. London: J. and A. Churchill. 1938. Pp. 329. 21s.
6. Adulterations of Food, with Short Processes for their Detection By R. J. Atcherley. London: W. Isbister.

the problem of modern butter and margarine analysis is the examination of the fat and the detection of such substances as diacetyl added as flavouring agents. The food analyst now needs a knowledge of chemistry that would seem formidable to one of the old school, and in addition he must master the microscopy of foodstuffs which has grown into a voluminous and highly useful science of its own. The vast number and complexity of foods available for a modern civilised community has added greatly to the difficulty of arranging them in logical sequence in a textbook, though Dr. Cox has chosen an arrangement that is rational enough. Beginning with carbohydrates, and foods of which they are the dominant constituent, he goes on to tea, coffee, cocoa, condiments, the products of alcoholic and acetous fermentations, flesh foods, milk and its products, fats and oils. In an appendix he deals with the preservatives regulations and the detection of prohibited colouring matters. Dr. Cox writes for those who have a thorough chemical training, so he can omit the elements of his subject, and microscopy is largely beyond the scope of his book; but even so considerations of space compel him to reduce criticism of the analytical processes he describes to a minimum, and he thereby loses something in interest. Nevertheless, Cox is a trustworthy guide to the problems of detecting impurities and the subtleties of conditioning and improving, and his book would enable Atcherley, if he were alive today, to undertake modern food analysis with some confidence.

EXCRETORY CHANGES AFTER HÆMATEMESIS

DURING the last few years attention has been called by various writers to the association of high levels of blood-urea with massive hæmorrhages into the gastro-intestinal tract. In the investigation reported on p. 323 of this issue Dr. Black found that of twelve cases of hæmatemesis the majority showed a definite though usually transient fall in urea-clearance, and he suggests that this was due to impaired renal function and not merely to small urinary output or low-protein diet. Patients with high blood-urea after hæmatemesis usually excrete very little chloride in the urine. The association of high blood-urea with low serum-chloride—the "azotémie par manque de sel" of the French writers—is well authenticated in many surgical conditions, and on insufficient grounds the raised blood-urea after gastro-intestinal hæmorrhage has also been assumed by many to be associated with low chloride levels in the serum. In a recent paper Borst [1] has shown that in many cases this explanation is incorrect. During the period when the blood-urea was raised Borst also found very low sodium and chloride excretion in the urine, but the level of these elements in the blood was above normal. In contradistinction to sodium, the excretion of potassium was high, and the serum-potassium content normal or low. The concentration of urea in the urine and hourly output of urea were high, but as in Black's cases the urea-clearances were usually below normal. The explanation of these changes is far from clear. The raised blood-urea and increased urea excretion can be largely accounted for by breakdown of the protein of the blood extravasated into the gastro-intestinal tract: the extravasated blood is also responsible for part but insufficient to account for the whole of the potassium excretion, the remainder of which must therefore come from the tissues. As regards the sodium and chloride, the explanation is less easy to find. In the two of Borst's patients who recovered, the excretion of sodium and chloride after operation recommenced when the hæmoglobin had fallen to its lowest level, and the suggestion is made that there was imperfect filling of the cardiovascular system. There was not necessarily any shortage of the extracellular fluid as a whole, and in one case there was œdema at a time when sodium and chloride were being nearly completely retained. The teleological explanation is put forward that the retention of sodium and excretion of potassium has the object of increasing the extracellular fluid at the expense of the intracellular. How this result is brought about by the kidney is doubtful: the blood-pressures were normal and in general the urinary volumes were normal or only slightly diminished. It seems necessary to postulate some nervous or hormonal mechanism, possibly brought into action by the dehydration, but in the present stage of knowledge anything further is pure speculation. Excessive adrenal cortical action does not seem likely on quantitative grounds,[2] and the only obvious alternative is absence of some hormone, such as the pituitary hormone which has been shown by Starling and Verney [3] to be concerned with chloride reabsorption from the tubules. From the therapeutic standpoint two objectives arise from this work: first, the volume of circulating cells and plasma must be restored, and for this purpose continuous-drip transfusion is recommended; and secondly, urine output should be raised by administration of fluid, notwithstanding the presence of œdema, until the urinary urea concentration falls below its maximum and urinary chloride content rises. It is suggested by Borst that salt should not be given if the chloride content of the plasma is above normal; other workers have, however, found that the blood-urea can be brought back to normal, with clinical improvement, by adequate saline administration, and in practice there does not seem to be any risk in giving normal saline subcutaneously and per rectum to remedy the dehydration.

1. Borst, J. G. G., *Acta med. scand.* 1938, **97**, 68.

TORSION OF THE APPENDIX OF THE TESTIS

ALTHOUGH it is sixteen years since G. H. Colt [4] described torsion of the hydatid of Morgagni or testicular appendix, comparatively few examples have yet been reported. Mr. McFadden, who records three cases on p. 320, suggests that the condition is not very rare but is still generally unrecognised. According to V. W. Dix,[5] who summarised the clinical findings in 47 recorded cases in 1931, the diagnosis is not usually difficult. Boys between eleven and fourteen years are most commonly affected, and the patient typically gives a history of sudden pain in the scrotum and radiating along the cord, sometimes following effort. In the more acute cases, within a day or two of onset, the scrotum on the affected side is red, swollen, and exquisitely tender. There is an ill-defined mass, which may be two or three times the size of the normal testis and epididymis, with a point of maximum tenderness in its upper part. The patient's temperature is not high and he does not look ill. Often the symptoms are so mild that patients do not seek treatment for several days. In some cases there is a localised tender tumour in the region of the head of the epididymis and the superior pole of the testis. This

2. Harrop, G. A., and Thorn, G. W., *J. exper. Med.* 1937, **65**, 757.
3. See Verney, E. B., *Lancet*, 1929, **1**, 539.
4. Colt, G. H., *Brit. J. Surg.* 1922, **9**, 464.
5. Dix, V. W., *Brit. J. Urol.* 1931, **3**, 245.

type should not be mistaken for a cyst of the epididymis because these occur later in life and do not have the same sudden onset. In torsion of the testicle itself the onset may be similar but the symptoms are usually much more severe. Dix, however, quotes a case of torsion of the testicle described by A. Mouchet in which operation was delayed because the mildness of the symptoms suggested the lesser lesion. As a rule the condition will subside in time if left alone, but excision rapidly relieves the pain and clears up any doubt as to the diagnosis. At operation the tunica vaginalis is found to contain fluid. The hydatid is usually gangrenous and appears as a black or occasionally reddish body lying between the epididymis and the upper pole of the testis. Most of the hydatids described have been about the size of a pea, but they may be as big as the testis. Dix thinks that the larger hydatids are the most likely to become twisted.

VASODILATOR NERVES

THE main purpose of the present surgical treatment of peripheral vascular disease is to abolish vasoconstrictor tone by removing portions of the sympathetic nervous system, and the importance of the concomitant removal of vasodilator impulses has perhaps been too little considered. Clearly it would be useful to ascertain what part vasodilator impulses play in the nervous regulation of the blood-vessels of man.

Since 1876, when Stricker demonstrated flushing of the extremities on stimulating the distal ends of divided posterior nerve-roots, animal experiments have pointed to the possible existence of vasodilator fibres. The difficulty of demonstrating their presence in man arises from the fact that the removal of vasoconstrictor tone by sympathectomy results in vasodilatation, and this dilatation would make it difficult to show any further increase in the blood-flow through the vessels even if they were subjected to vasodilator influence. It has been thought that evidence of a dilator action might be obtained by comparing the blood-flow through two hands—one of which has been sympathectomised—after full vasodilatation has been produced by body-warming. When this is done it is found that the blood-flow through the sympathectomised hand, which has been deprived of both vasoconstrictor and vasodilator nerves, is less than that through the normal hand, in which vasoconstrictor tone has been relaxed by the warming of the body and vasodilator impulses are presumed to be acting. The inference that the difference in blood-flow represents the effect of vasodilator impulses is, however, fallacious, for it is found that though the sympathectomised vessels have been released from nervous vasoconstrictor tone they are still held in constriction, the reason being that sympathectomy has made them abnormally sensitive to circulating vasoconstrictor substances.

The action of vasodilator fibres on the skin of the limbs has lately been demonstrated by Grant and Holling.[1] In normal subjects warming of the body causes vasodilatation not only in the hands and feet but also in the skin of the more proximal parts of the limb, and this flushing of the skin of the proximal parts is independent of the warming effect of the venous return from the extremities. The vasoconstrictor tone acting on the cutaneous vessels of the forearm appears to be negligible, for blocking the nerves to the skin has no apparent effect on the amount of blood flowing through it under normal conditions. Grant and Holling find that such blocking of the nerves, either by local anæsthetics or by section of the peripheral nerves or the sympathetic, prevents the appearance of the flush over the anæsthetic part when the body is warmed, and from this it is deduced that sympathetic vasodilator nerves are responsible for it. So far as the proximal parts of the limb are concerned, therefore, it seems that sympathectomy will do little to increase the blood-supply; for the effect of removing vasoconstrictor tone will be small and the accession of vasodilator impulses will be prevented.

In the extremities it has only been possible to show the effect of vasodilator nerves in cases of Raynaud's disease. Lewis and Pickering[2] noted that in some cases, if the ulnar nerve was blocked when the hand was in spasm, release of the vasoconstrictor tone in the little finger did not occur; and further, when release of the spasm in the other fingers was produced reflexly by body-warming, the vessels of the little finger remained constricted. The failure of vasodilatation to take place in the paralysed area while it is appearing in the other fingers leads to the conclusion that it is mediated by the action of vasodilator nerves rather than by the release of vasoconstrictor tone. These observations have been confirmed and extended to include the lower extremities by Fatherree and Allen[3] of Rochester, Minn. In so far as they may be applied to the treatment of Raynaud's disease by sympathectomy they indicate that though spasm of the vessels is less likely after sympathectomy its duration if it does occur may be prolonged, because the vasodilator fibres have been paralysed by the operation.

THE TENTORIAL PRESSURE CONE

"TONSILLAR" herniation—the extrusion of the tonsils of the cerebellum through the foramen magnum by a tumour in the posterior cranial fossa—is now well known and is often demonstrated to students at autopsy. If not relieved by operation this displacement may cause fatal compression of the medulla, and lumbar puncture may precipitate such a catastrophe. What is not nearly so widely recognised is that a similar "pressure cone" may occur at a higher level in the cranium, through the incisura tentorii. This important condition is now receiving critical attention, and Jefferson,[4] in an address delivered in the United States, has made a delightfully lucid contribution to its understanding. He begins by describing the anatomy of the structures passing through the opening in the tentorium, and the relation of the temporal lobe to the upper surface of the tentorium. When the mass of the cerebral hemispheres is increased by tumour there is a crowding of structures through the incisura tentorii, and in particular the medial lips of the temporal lobes are pushed through the opening. Grooving of the uncinate gyri by the sharp edges of the tentorium can often be demonstrated at autopsy if a search is made. Such herniation is conspicuous in cases of tumour of the temporal lobe, but it readily takes place when the neoplasm is located elsewhere in the brain. It may be found in cerebellar tumours, probably as a result of the hydrocephalus.

This temporal pressure cone is a grave complication, for by plugging the opening in the tentorium it compresses the third ventricle, aqueduct, and midbrain. By obliteration of the cisterns around the

1. Grant, R. T., and Holling, H. E., *Clin. Sci.* 1938, **3**, 273.
2. Lewis, T., and Pickering, G. W., *Heart*, 1931, **16**, 33.
3. Fatherree, T. J., and Allen, E. V., *Arch. intern. Med.* December, 1938, p. 1015.
4. Jefferson, G., *Arch. Neurol. Psychiat.* 1938, **40**, 857.

mid-brain the circulation of the cerebrospinal fluid is further impeded. As Jefferson points out, compression at this level will also interfere with subthalamic autonomic centres and disturbances of these vegetative centres are probably responsible for the fatalities that may follow ventriculography or lumbar puncture in these cases. Finally, from the diagnostic standpoint, it has to be realised that tentorial herniation may profoundly modify the clinical picture that was directly attributable to the tumour. An excessive degree of contralateral paresis and spasticity, at times a state of decerebrate rigidity, disturbance of pupillary reflexes, nuchal pain and stiffness, and paroxysmal headaches are cardinal features of this type of herniation. Its recognition is a matter of urgency, for lumbar puncture should be withheld, and operative relief should be sought immediately.

TO CHINA AND BACK

James Cantlie, whose biography has now been written,[1] would have made his mark in any field, for he was a man of vision without being a visionary. Starting as a demonstrator of anatomy, before long he was on the staff of Charing Cross Hospital, an examiner in surgery at Aberdeen, and a contributor to textbooks of medicine, surgery and anatomy. At the age of 31 he joined the London Scottish Volunteers, and marrying two years later it looked as if he would settle down as a London surgeon and consultant. But his flair for organisation, combined with a facility for friendship and a Scot's tenacity of purpose, was to lead him into less well-trodden paths. He began to lecture on first-aid, and the story of the formation of the Volunteer Medical Staff Corps is quite thrilling. When this movement was safely launched he went out to Egypt to fight cholera, getting there his first introduction to tropical diseases. Returning to England he consolidated his previous work by a series of inspiring lectures at the London medical schools, and within a year the staff corps had taken firm root. In his versatile way he now came out as a preacher of hygiene and began with "Degeneration amongst Londoners" as his text, meeting with opposition and even ridicule. Now a senior surgeon at Charing Cross he threw up his appointment to go to Hong-Kong, joining the "firm" of Manson and Hartigan; and soon Cantlie's schemes were the talk of the colony. There he turned his enthusiasm to the St. John Ambulance, the Peak Hospital, and new work on tropical diseases. A visit to the Canton leper colonies in the company of Dr. Sun Yat Sen resulted in an essay which won the prize of the Leprosy Commission. In 1887 he was engaged on the building up of the college of medicine in Hong-Kong, later to become the nucleus of the medical unit of the university there. He passed through the terrible plague epidemic of 1894 but the strain left its mark on his health and he left the colony in 1896, having won universal respect and admiration.

In 1896 Sun Yat Sen visited London and was lured into the Chinese legation in Portland Place with a view to being shipped off secretly and beheaded as a dangerous revolutionary. How he managed to convey information to Cantlie, and how the latter by his prompt and persistent action secured his release and saved his life, make a story after Phillips Oppenheim's heart. Naturally the future president of China became a lifelong friend. We now see Cantlie as the tropical diseases specialist, though he accepted the chair of applied anatomy at Charing Cross. Again he plunged into the teaching of first-aid and he prepared a new edition of the St. John handbook. He helped Manson in founding the London School of Tropical Medicine, and for long he lectured there on plague, liver abscess, and kindred topics. The *Journal of Tropical Medicine and Hygiene* was his venture, and justified itself at once. For twenty-five years he remained its editor. In 1907 he was the moving spirit in the creation of the Society of Tropical Medicine and Hygiene, and he became president in 1921. Active both in the British Red Cross and the St. John Ambulance Association, and author of their manuals, his work was redoubled on the outbreak of war. Both he and his wife did all that human effort could do to press forward the foundation of the College of Ambulance, and in 1918 Cantlie was knighted for his services. But financial troubles came, and to Cantlie's great grief the college had finally to be closed. In 1921 he lost his wife, who had been a noble helpmeet, and he was never the same man again. In 1925 increasing ill health made him give up teaching and in 1926 he died.

Cantlie had the native shrewdness of the Scot. He was always ready to spend and be spent for others, and though he was impetuous at times he was beloved by all who knew him. This well-considered biography was overdue.

THE SITUATION IN SPAIN

Two groups of medical and scientific workers have set their names to fresh appeals for help for Spain. The first, covering a memorandum on the food situation, comes from Miss D. J. Collier, Sir Gowland Hopkins, O.M., Lord Horder, Sir Robert McCarrison, Prof. R. A. Peters, F.R.S., Prof. John Ryle and Dr. Janet Vaughan, who point out that Spain needs food even more urgently today than she did when the League of Nations commission reported in the autumn. We have already quoted Dr. Audrey Russell's telegram describing conditions in Barcelona last month; the ration for babies, she said, was 250 g. of dried milk and 100 g. of sugar weekly—and that was before the final influx of refugees in front of the Nationalist advance. Dr. Richard Ellis, who was in Catalonia till a few days before Barcelona fell, explains that this milk was only skimmed milk and that this maximum ration was only received in full if nothing went wrong. The memorandum also refers to his observations that there is an extraordinarily high sickness-rate among the child population; of 460 children between two and five years of age who were supposed to attend a canteen for their food, 175 were away through illness—mostly respiratory. An average child receiving the extra relief ration had a hæmoglobin of 40 per cent., and almost none of the women could feed their infants at the breast. There is still unfortunately a serious shortage of food in Barcelona, and representatives of the Friends Service Council who remain in the city have sent requests for frozen meat. On behalf of the All London Aid Spain Council a group, including Prof. A. St. G. Huggett, Dr. Alan Moncrieff, Miss Esther Rickards, Dr. John Rickman, and Dr. G. M. Vevers, asks for help in sending another food-ship to Valencia; "with the rations they already get, it is calculated that 2*s.* will keep a child in normal health for a month." Conditions in Republican Spain are so bad that Prof. J. C. Drummond reports the statement that "300–400 people die daily in Madrid from actual starvation." One of the aims of the London council is to persuade Londoners to adopt 50,000 Spanish children, and particulars of this scheme may

1. Sir James Cantlie. A Romance in Medicine. By Neil Cantlie and George Seaver. London: John Murray. 1939. Pp. 279. 10*s.* 6*d.*

be had from it at 4, Great James Street, W.C.1. Contributions of food and money may also be sent to the National Joint Committee for Spanish Relief (4, Great Smith Street, S.W.1) or the Friends Service Council (Spain), Friends House, Euston Road, N.W.1.

LEPROSY IN EAST AFRICA

THE valuable work of the British Empire Leprosy Relief Association is well illustrated in the observations made by Dr. Ernest Muir, the medical secretary, during a six months' tour of various countries, mainly in East Africa.[1] Taking north-east Africa as a whole, southern Sudan appears to be the only part escaping serious infection. This is no doubt largely because of the sparseness and nomadic habits of the population and the difficulty of communications but possibly partly because of the people's milk and meat diet and their hard life which tends to weed out the unfit. Areas of high endemicity are found in the north-west of the Belgian Congo and extending over the equatorial province of the Sudan and western part of Uganda. The severity of the disease does not always run parallel with its frequency, and although this may indicate variation in strains of bacilli, it might also be explained by the occurrence of mild cases in highly resistant individuals living in areas where they are constantly exposed to infection. With regard to outpatient clinics Dr. Muir wisely draws attention to the limitations of drug therapy and the necessity for action based on the essentials of general hygiene. Education of the people on the nature of leprosy and simple precautions for its prevention would do much to diminish its prevalence. Adequate nutrition and the treatment of associated diseases in those infected is of primary importance, while sound occupational training, especially in agriculture, would solve many of the problems not only of individual treatment but of segregation and prevention. Most important of all is expert advice. The bulk of anti-leprosy work is at present being done by religious missions financed by government or native administrations, and much of this expenditure is not bringing in a proportionate return, often only for want of proper knowledge. Dr. Muir suggests that a leprosy expert should be appointed for British East Africa who would coördinate the work at the various centres. The expense of such a scheme might be met by grants from the various countries benefiting and from the Association, which has already agreed to contribute £250 a year for five years if the scheme materialises.

REFUGEE SCHOLARSHIP

THERE was something of the solemnity of a historic occasion when SirWilliam Bragg, O.M., rose on Tuesday evening to give the blessing of the Royal Society to the appeal for the protection of science and learning. On the previous evening the appeal had been inaugurated in the great hall of University College (reported on another page) when the Archbishop of York presided and the Home Secretary showed how, quite apart from humanitarian motive, this country would gain by the entry of leaders of thought from other countries. Sir William Bragg expressed sympathy, as indeed did those who followed him, with all who felt they might be displaced by an influx of scholarship from abroad; but, he said, care had been taken to see that no such displacement would occur, and he spoke of the whole movement as being in the best tradition of the Royal Society which from its foundation had corresponded all over the world. In the early days that meant something when the Corr. Mem. R.S. had to give account of all the curious things that were happening in his own country; as time passed this traffic of scientific thought had become too great for the single channel, but the spirit of the Royal Society remained the same. Sir Frederick Kenyon, speaking for the British Academy which represented the humanities, said how much help had already been given by universities in this country both in their corporate capacity and unofficially by staff and students—who as a body were by no means well off. While everything, he said, was being done to avoid competition it was evident that fresh life was bringing fresh work and that it was safe (as well as noble) to salve the wrecks of scholarship and learning in Europe. The Archbishop of York, replying as president of the Society for the Protection of Science and Learning, said the comradeship of scholars was not easily won and was not easily held, for men always tended to demand of study that it should in some way serve their convenience. But we recognised the paramount claim of truth, wherever found, to be the property of mankind, and the brotherhood of those engaged in its pursuit. The Society had been and would be most careful to ensure that no-one was displaced or kept out of a job. In most cases after a sojourn in this country it was hoped to find the refugee asylum in some country where the development of life had been less stabilised than in this ancient land.

Six other meetings are being held in London at which the speakers will be Sir Norman Angell, Sir Allen Mawer, Sir Bernard Pares, Prof. Gilbert Murray, Prof. J. B. S. Haldane, F.R.S., Prof. P. M. S. Blackett, F.R.S., and Miss Rebecca West. Lord Winterton and Prof. A. V. Hill, F.R.S., addressed a meeting at Cambridge on Feb. 8, and Lord Samuel and Sir John Hope Simpson speak at Oxford on Feb. 10. Other meetings are being held in Liverpool, Glasgow, Birmingham, and Leeds, at which the speakers will be Sir William Bragg, Sir Henry Dale, F.R.S., Mr. Philip Guedalla, and Mr. T. E. Harvey, M.P.

At 4 P.M. on Tuesday, Feb. 14, Mr. SAMPSON HANDLEY will deliver the Hunterian oration to the Royal College of Surgeons. His address will be entitled Makers of John Hunter.

Prof. P. LARMARQUE, of the faculty of medicine of the University of Montpellier, will deliver the third Skinner lecture to the British Association of Radiologists at 32, Welbeck Street, London, W.1, at 3.30 P.M. on Feb. 17. He will speak on diffuse skeletal metastasis in cancer of the breast, and will also describe some results of historadiography.

Lord D'ABERNON, we are happy to state, is still with us despite an unfortunate slip in an annotation last week. He has had many important contacts with medicine. After presiding for six years over the Central Control Board (Liquor Traffic), he was chairman of the Industrial Fatigue Research Board and (1929–33) of the Medical Research Council. He was elected F.R.S. in 1934.

At a meeting of the board of management of the Royal Dental Hospital of London school of dental surgery it was resolved to reopen the school to women students from May 1 next. Women students had been admitted to the school from the early days of the late war and were excluded in 1933 by resolution of the board.

1. Summarised in *Leprosy Rev.* January, 1939.

SPECIAL ARTICLES

REFUGEE SCHOLARS AND SCIENTISTS

FURTHER efforts for the assistance of academic refugees were inaugurated at a meeting held by the Society for the Protection of Science and Learning at University College, London, on Monday last.

The ARCHBISHOP OF YORK, who presided, stated that £4926 had been given in spontaneous response to the announcement that an appeal would be made. He went on to speak of the loss to the world when men of special knowledge were deprived of the chance to perfect their researches or communicate their results. The man of special academic training had as a rule no general capacity that could be employed in a variety of ways; unless he was helped to follow his own vocation, he could not be helped at all.

Sir SAMUEL HOARE, the Home Secretary, also pointed out that the work of scholars and scientists had often handicapped them for the struggle of a new life. Even setting aside all humanitarian motives, he said, the country had gained, and would gain, permanent benefit of the greatest value by the entry of leaders of thought, of notable teachers and distinguished scientists. So careful had the refugee organisations been to ensure that no immigrant should displace British labour that 11,000 immigrants had provided work for 15,000 British workers who would not otherwise be employed. The special areas in particular had benefited from the new enterprises set up. There was no reason why the world of thought should differ from the world of industry. Prof. Einstein had spoken to him without bitterness of those who had forced him to leave his country, but with sorrow at the ignorance that seemed to be destroying so much intellectual life. Recognising the service of the scholar and its value to the world it was necessary to help these outcasts in the days of their tribulation.

The Marquess of READING said that until recent years the welcome extended in any country to a man of learning by his fellows had depended not upon the purity of his blood, the shape of his nose, or the colour of his shirt, but upon the quality of his brain and the value of his researches to the progress of civilisation as a whole. The need was urgent if these refugees were to fulfil their mission, not to supplant British by foreign scholarship but to contribute to the development in this country of art, science and industry.

Sir PETER CHALMERS MITCHELL, F.R.S., said that neolithic man had deliberately removed pieces of bone from the skull during life, and it appeared that this trepanning was often successful. He found it hard to believe that the necessary experiments had been made, and the consequent precise knowledge of cause and effect attained, by savages with stone implements; he preferred to imagine that it was a tradition—a memory from an older and higher civilisation. The modern world, civilised and savage, was full of superstitions and practices far too elaborate on the one hand, and too meaningless on the other, to have arisen independently. Might they not be relics of the great civilisations of the past? In modern therapeutics many remedies were prepared in the laboratory, and if we imagined a swift elimination of the scientific men who prepared them, and who knew why and how they were used, it would be easy to suppose that their memory might survive as a belief that there was some virtue in the liver of men and animals, or in the fat of an adder. It was not known why the great civilisations of the past decayed; was it so certain that ours, the product of only a few centuries, might not perish as quickly as it had arisen? Only a quarter of a century ago it seemed as if the protection and progress of science and learning were secure in every part of the world. Now the men and women who were making a great contribution to every branch of learning and science were being sacrificed to a racial fantasy as evil as it was absurd, and thought was being fettered by the Moloch of the state.

Devotees of the arts and sciences had been too disposed to think of themselves as a reserved caste, outside the rowdy turmoil of the political world, getting on with their jobs in fancied security, and lightly taking their daily prejudices from their favourite newspapers. But the crisis came on their brothers in Germany with the swiftness of a great convulsion of nature, and, unlike earthquakes and floods, it was contagious and was spreading from one country to another. It was well that we should have among us those who had escaped with their lives and could shake them out of their slothful indifference to everything except our own work. Nor could we spare the services of any of the men who interpreted the knowledge of the past and who were preparing the way for the advances of the future. The crowded state of our own laboratories and universities made difficulties in doing all we wished, but the difficulties could be overcome by money, and such gifts would be a rich investment.

Some did not regard totalitarian doctrines and pogroms as diseases in themselves but as symptoms of a deep-seated disorder of society—symptoms like the calamitous race in armaments, the angry struggle for new markets, the continued existence of distressed areas, the clamour of the unemployed, and the luckier demands from almost every industry to get subsidies from the state. We needed all the wisdom of men of science, scholars, philosophers and historians in this country and of those who were refugees to guide us, if possible, along the path of sane evolution.

BIOLOGICAL STANDARDISATION

FOR the third time during the past four years a special number of the *Bulletin of the Health Organisation* of the League of Nations has now been devoted to the work of the Permanent Commission on Biological Standardisation. One of the main objects of the Commission is to establish international standards for the biological assay of therapeutic substances.[1] The first of these standards, that for diphtheria antitoxin, was adopted in 1922, and the total is now brought to 31 by the announcement in the present publication of the establishment of standards for four additional hormones. These four new standards are provided for the assay of the gonadotrophic substance of the human urine of pregnancy and of the serum of the pregnant mare, and for the thyrotrophic substance and lactogenic substance (prolactin) of the anterior lobe of the pituitary gland. The final decisions regarding the nature of the standards, their preparation, dispensing,

1. See *Lancet*, 1935, **1**, 685.

and storage at the National Institute for Medical Research, Hampstead, and their distribution therefrom to national control centres in other countries, were taken at the third international conference on the Standardisation of Hormones held at Geneva in August, 1938, at which sixteen experts from eight countries were present. Arrangements were made at the conference for further research into the possibility of establishing standards for other hormones of the anterior lobe of the pituitary gland.

Another section of the *Bulletin* announces the replacement of the original international standard for the antineuritic vitamin B_1, which consisted of an adsorption product of a vitamin-B_1 preparation made from rice polishings on fuller's earth, by a sample of pure synthetic crystalline vitamin-B_1 hydrochloride.[2] The results of the investigations carried out with the object of evaluating the international unit in terms of the new standard are summarised in an appendix, which incidentally provides a typical illustration of the international character of the work of the Commission. The comparative tests were carried out by 19 workers in nine countries; 34 estimates of the unit value of the new standard were made by eight different methods, and the mean value of the unit by seven of these methods ranged from 2·6 to 3·2 microgrammes. A single observation by the remaining method gave a slightly lower value for the unit. Having regard to the great diversity of the methods employed, the results show a very satisfactory degree of concordance and justify the adoption of the value of 3μg. for the value of the unit in terms of the new standard preparation.

The greater part of the number is devoted to researches carried out in connexion with the international standards for serological and bacteriological products. While no new standards for this type of therapeutic substance are announced, the original standard for staphylococcus antitoxin, which has become exhausted, has been replaced by a second preparation, the unit value of which has been exactly determined. The original standards for antipneumococcus serum, types I and II, are also approaching exhaustion, and work in connexion with their replacement is in progress. In view of the rapid developments in this field, however, both in regard to the therapy of pneumococcus infections and in the nature of the antisera used and the methods of their assay, the Commission decided to postpone action so far as the adoption of standards for other types of antipneumococcus serum is concerned. In recent years remarkable progress has been made in the purification of old tuberculin. Highly purified preparations are now being used in several countries. They possess many advantages over the crude tuberculins hitherto employed, and their value and application is not confined to human medicine The Commission has accordingly decided to establish a subsidiary standard for purified tuberculin; its potency will be determined in relation to the present international standard old tuberculin which, it is expected, it will eventually replace. Other matters which have engaged the attention of the serologists of the Commission relate to the present standards for tetanus and gas-gangrene antitoxins and the possibility of establishing standards for anti-typhoid, anti-anthrax, and anti-viper sera. The recommendations of the Commission in regard to serological and bacteriological standards were adopted at a meeting held in Paris in October, 1938. The subject matter upon which their recommendations are based is published in a series of papers containing detailed accounts of investigations carried out at the Institutes in Bucharest, Buenos Aires, Copenhagen, Hampstead, Paris, Szeged and Washington. Both on the grounds of principles involved and of practical importance in assay, these reports are of interest to all engaged in the work of biological standardisation.

2. *Ibid*, 1938, **2**, 1258.

UNITED STATES OF AMERICA

(FROM OUR OWN CORRESPONDENTS)

A SPECIAL MESSAGE ON HEALTH

President Roosevelt addressed to the Congress yesterday (Jan. 24) a special message with which he transmitted the report and recommendations of the inter-departmental committee to coördinate health and welfare activities. In this message the President defines "the objective of a national health programme." It is "to make available in all parts of our country and for all groups of our people the scientific knowledge and skill at our command to prevent and care for sickness and disability; to safeguard mothers, infants, and children, and to offset through social insurance the loss of earnings among workers who are temporarily or permanently disabled." Your readers may well wonder why the definition is not complete at the semicolon. The composition of the inter-departmental committee, representing as it does the public-health service in the treasury department, the children's bureau in the labour department and the Social Security Board is the explanation of the last half of the definition, and it may be feared it is the prime cause of a continuation of the present inchoate organisation at Washington. There seems little hope that Congress will of its own initiative place the health of fathers and mothers into the same category.

I have not yet seen the full report transmitted by the President to Congress but the official summary thereof follows very closely the recommendations presented by the inter-departmental committee to the National Health Conference last July.

SULFAPYRIDINE

The council on pharmacy and chemistry of the American Medical Association, at the request of a number of investigators and manufacturers in this country, has adopted a non-proprietary title for the pyridine derivative of sulfanilamide which is commonly described in English literature as M. & B. 693 or Dagenan. The name they have adopted is "sulfapyridine." This is a contraction of the chemical name sulfanilamidopyridine.

WINGATE TODD

The recent death of Dr. T. Wingate Todd, director of the Brush Foundation and professor of anatomy at Western Reserve University, removes from the American scene not only a scientist of the first rank but also a stalwart outpost of the British Empire. Those who had the high privilege of being entertained in his home at Cleveland traversed the Atlantic when they stepped across its threshold: from the unspoiled accent of each member of the family to the arrangement of the table silver every detail of that home was British. Wingate Todd has done for the anatomy of the skeletal system what William Snow has done for the anatomy of the lung. He has extended scientific observation by the application of innumer-

able measurements which nobody else had the industry and genius to undertake. The first volume of his "Atlas of Skeletal Maturation" is in print. Here may be seen the high standards of technical achievement which ministered to his research and made the X rays so potent a weapon of investigation in his hands. In the publications of the Brush Foundation, of which I have 34 (I hope that there are more), may be seen the breadth of his interest and the untutored synthesis of his thought. Death threatened him in vain. He might have lived longer if he had been "careful" but it would not have been the life of Wingate Todd.

MEDICINE AND THE LAW

Medical Confidences

A young woman was charged last week at Bradford with having unlawfully used an instrument. Dr. Violet Glover, who had attended her, was present sub pœna with a view to giving evidence in support of the charge. In the witness-box Dr. Glover made the usual and proper objection to giving evidence. "What I have to tell was communicated to me in confidence by the defendant in my professional capacity as a doctor, and I shall refuse to give evidence unless forced to do so." The stipendiary magistrate asked the prosecution if Dr. Glover's evidence was essential. The answer was that the witness appeared sub pœna and that members of the medical profession had no privilege in law. The magistrate allowed Dr. Glover to retire from the witness-box until all the other witnesses had given evidence. He then said that, if the prosecution insisted on calling her, he was bound to order her to give her testimony. He had himself great sympathy with any doctor, or with any priest, who protested against revealing publicly some confession received in a professional capacity and he would be glad to see the law altered. Dr. Glover's evidence was then given and the accused woman was committed for trial at Leeds assizes.

The sympathetic attitude of the bench often does its best to avoid pressing a reluctant witness. During another recent case, where no issue of professional confidence arose, the chief witness against a young man was his mother. Her natural disinclination to incriminate her son was appreciated by the magistrate who expressed the view that it would be better that other evidence if possible should be produced. There was of course no question that the mother could be compelled to give evidence, or at least could technically be punished for contempt of court if she refused to speak. But magistrates fortunately are human beings. The attitude of the bench in the Bradford case will be appreciated by the medical profession.

Diphtheria Contact's Dilemma

During a diphtheria epidemic at Wirksworth the medical officer of health's activity in isolating all contacts has brought to light a curious omission in the law. One contact was found waiting at the labour exchange; after he had been examined at the isolation hospital, he was taken home and told he must not go out. This direction he disobeyed; strictly, therefore, he could be prosecuted for an infringement of the Public Health Act. But what was the poor man to do? A contact cannot draw sickness benefit under the National Health Insurance Act because he is not suffering from a disease. He cannot draw unemployment benefit because he has a job to go to. In its own interests the community asks him to abstain from work, but it makes no provision for him to live. There are analogies in our public-health legislation for compensating men and women who give up their work in order to avoid the spread of infection. The Ministry of Health is doubtless already considering the best means of dealing with the situation.

The Improved Public-house

Without suggesting that a higher standard of national health depends on a bigger consumption of cakes and ale, it is possible to support a policy of better public-houses as a step towards better public-house behaviour. This policy met a serious set-back in a decision of the divisional court in the Weston case last October. The recent reversal of the decision may therefore be hailed as a victory for temperance. It is understood that the opinion of the House of Lords is not to be taken.

The owners of the Three Queens Hotel at Weston-super-Mare applied to the local justices for permission to enlarge a saloon bar by incorporating certain adjoining premises. The justices announced that the alterations were necessary and desirable and would not destroy the identity of the premises; in view, however, of a decision of the High Court respecting a similar situation in the Isle of Wight, they considered that they had no power to grant the application. The opposition to the application, it should be mentioned, came rather from the excise authorities than from any kill-joy fanaticism. Those authorities contended that there was no jurisdiction under section 71 of the Licensing Act of 1910 to grant an extension of licensed premises unless it took place within the existing premises. On appeal to the divisional court the Lord Chief Justice upheld this contention. "Alterations in any licensed premises" in his opinion must be literally construed; the word "in" must mean "within"; the owners of the public-house had urged that the words "alterations in" were equivalent to "alterations of" or "alterations to." The Lord Chief Justice's decision was a serious matter for hotel managements. It meant that, if any alteration was desired which involved an extension of the licensed area outside the four walls of the existing premises, the existing justices' licence would be forfeited and a new licence would have to be applied for, which would cover the whole premises and would not be issued without the payment of "monopoly value." Since 1904 there has been a compensation fund which is financed by additional duties paid on the renewal of an old licence and by monopoly-value payments required on the grant of a new one. The scale of the monopoly value is sufficiently high to make owners hesitate a very long while before embarking on proposals to alter premises.

The decision of the divisional court in the Weston case has now, however, been overruled by the unanimous judgments of three Lords Justices in the Court of Appeal. They hold that it was competent for the justices to consent to an alteration in the physical premises if the justices thought that the proposed alteration, when made, would bring the altered premises within the ambit of the licence. This opinion will bring relief to owners who are pursuing a policy of improving their houses. The justices will be at liberty to sanction alterations which in their opinion do not destroy the identity of the existing licence notwithstanding that the alterations go beyond the four walls of the existing premises.

PUBLIC HEALTH

Supplementary Feeding

FEW people know what are the exact powers vested in local authorities for granting food supplements. This is not to be wondered at since the rulings are made in a number of acts and circulars and the wordings allow plenty of latitude in interpretation. The Children's Minimum Council however have helpfully produced a pamphlet[1] briefly setting out just what local authorities can do. The council point out that big changes in the law would be required to assure that no child should suffer from malnutrition because of the poverty of its parents but that the chances of health and happiness of thousands could be increased if existing provisions were used to the full.

The supplements for mothers and young children are under the jurisdiction of the maternity and child welfare authority in each district, while those for school-children come under the education authority. The provisions vary widely from one district to another. For the most part the powers granted for the mothers and infants are permissive: authorities may provide milk and other foods free and at reduced rates to mothers throughout pregnancy and lactation and to children under five who are not attending school. Iron and vitamin preparations as well as liquid or dried milk are often supplied, and such provisions may be extended without obtaining the sanction of the Ministry of Health "to such an extent and in such a manner as the authority thinks desirable." In addition, in 1937 the Minister asked local authorities to review their arrangements in the light of the report of the Advisory Committee on Nutrition, which had recommended a consumption of 2 pints of milk a day by nursing and expectant mothers and 1–2 pints by children. The Minister's circular stated that income scales should be so framed as not to make it difficult for any mothers to take advantage of the authorities' arrangements. Certainly in the past restrictions have often prevented the milk from being given where it was needed. It has sometimes only been given during the last three months of pregnancy or only during the first one or two years of life. The total quantity allowed to a woman is often only a pint a day and the income scales for determining "necessity" are in many districts far below any accepted estimates of the minimum expenditure necessary for health. Under some of the more generous scales free milk is allowed for instance to couples with three children who have less than 40*s*.–50*s*. weekly after rent has been deducted; commonly the limit is 6*s*. per head apart from rent even in the more prosperous areas. This in practice means that a couple with one or two children seldom qualify for free milk although their circumstances may call for considerable self-denial on the part of the mother. Under many schemes even though the income is frankly insufficient to supply the needs of full health medical evidence of malnutrition is required before milk is given to a mother. Minor regulations such as those requiring the mother to attend a clinic each week also impede the scheme.

For children attending elementary schools the local education authority may provide meals at cost price but may only provide meals or milk free for those with some evidence of undernourishment in addition to proof of poverty

1. Nutrition and Local Government. By Marjorie E. Green. Children's Minimum Council, 72, Horseferry Road, S.W.1. 1938. Pp. 18. 3*d*.

School teachers, nurses and attendance officers are however encouraged to report those who are apparently in need of extra nourishment, and the school doctor usually reviews the nutrition of all the classes at his routine visits, selecting for more careful overhaul any children who appear to be underfed. The scale of income chosen by an authority to determine necessity has to be submitted for approval to the Board of Education, but there is no standard scale and local interpretation varies considerably. The smallest allowances approximate to the B.M.A. scale of cost of feeding and leave next to nothing for warmth, cleaning, clothing, or small personal indulgences. For example, in many areas three children in a family only qualify for free milk or meals if they and their parents have less than 23*s*. a week apart from rent: the B.M.A. scale suggests that about 22*s*. (depending on the age of the children) is necessary to feed such a family. Simple arithmetic shows that some people outside these scales must be undernourished. More commonly the scales are rather more generous, a family of that size qualifying if their weekly wage is under 30*s*.

The Children's Minimum Council explain in their pamphlet how to find out which authority is responsible for each service in an area, and they give some sound advice to those who would like to approach their authority. Apart from direct representations some good may be achieved by influencing public opinion; councillors are of course continually confronted with desirable schemes requiring expenditure and their judgment of what is justified must be based to a certain extent on general opinion.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 28, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1742; diphtheria, 1364; enteric fever, 17 (28 "expected"); pneumonia (primary or influenzal), 1507; puerperal pyrexia, 166; cerebrospinal fever, 34; acute poliomyelitis, 15; acute polio-encephalitis, 2; encephalitis lethargica, 3; relapsing fever, 1 (Tonbridge); dysentery, 29; ophthalmia neonatorum, 91. No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 3 was 3212, which included: Scarlet fever, 612; diphtheria, 989 (carriers, 34); measles, 3; whooping-cough, 735; puerperal fever, 16 mothers (plus 11 babies); encephalitis lethargica, 298; poliomyelitis, 12. At St. Margaret's Hospital there were 27 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In 126 great towns, including London, there was no death from smallpox or enteric fever, 3 (0) from measles, 2 (1) from scarlet fever, 14 (4) from whooping-cough, 26 (1) from diphtheria, 38 (12) from diarrhœa and enteritis under two years, and 173 (28) from influenza. The figures in parentheses are those for London itself.

Of the 173 deaths attributed to influenza 63 were reported from the South-eastern Area; 95 from the Northern Area, Liverpool contributing 14, Manchester 8, Sheffield 7, Bolton 6, Salford 5; and 14 from the Midland Area, Bristol contributing 5. Fatal cases of diphtheria were scattered over 21 great towns, no more than 2 in any. Coventry reported 2 deaths from whooping-cough.

The number of stillbirths notified during the week was 241 (corresponding to a rate of 40 per 1000 total births), including 35 in London.

THE AIR-RAID

A series of articles on medical organisation and surgical practice in air attack by
P. H. MITCHINER, C.B.E., T.D., F.R.C.S., *and* E. M. COWELL, D.S.O., T.D., F.R.C.S.

VI—VARIETIES OF WOUNDS

WOUNDS of the soft tissues may involve skin, subcutaneous fat, muscle, arteries, and nerves, and are often complicated by damage in their deeper parts to these structures; hence it is essential in dealing with all wounds to ascertain whether there are such complications in their depths. It is convenient to consider penetrating and lacerating wounds separately, for, though efficient excision must be carried out in both cases, it differs somewhat in practice.

Whereas the primary projectiles causing wounds are either fragments of bomb casing, portions of shrapnel (which may take the form of round balls, discs, or oblong segments), or sharp-nosed bullets, it must be realised that secondary bodies may act as missiles and be carried in and found embedded in the body. Thus the contents of a victim's pockets may be peppered by the force of the burst bomb, and such things as portions of pairs of scissors, penknives, coins, and pencils may be found distributed in the body, and occasionally outside objects, such as pebbles, bits of masonry, and even the bones and soft tissues of a nearby victim, may cause wounds and must occasion no surprise if found in the body of a wounded patient.

PENETRATING WOUNDS

H.E. bomb fragments and bullets from machine guns, of which the former alone are likely to be encountered in air-raids, cause penetrating wounds. The high velocity of the projectile causes considerable disruption of tissues in the vicinity of its track, and a sharp-nosed bullet of this type is easily deflected from its course; hence a projectile which has apparently passed through the body from front to back is often found to have travelled round the parietes, having been deflected in its course by a sheet of aponeurotic fascia—e.g., the external oblique aponeurosis—or a curved bone surface—e.g., a rib—in such a way that no damage has been done to the pleural or abdominal cavities. Elastic structures such as arteries, lying directly in the course of the bullet, may spring aside and escape direct injury. When the projectile has passed entirely through the body, wounds of entry and exit will be found, but the wound of entry has an extremely minute puncture which can easily escape notice, for it is often a punched-out hole with complete loss of skin. The track shows high degrees of disorganisation of tissues and is lined with a further area of devitalised tissue mixed with blood-clot. This enables it to be followed easily through the body. Solid organs in the track are usually pulped and show fissures radiating from the track, which is in these situations often considerably larger than the calibre of the bullet inflicting the wound. Hollow organs show tearing and destruction of a much greater extent than the size of the missile would suggest. The exit wound is more obvious than that of entry in most cases, and laceration and eversion of skin edges is often noted; in some cases these may be of great size with protruding portions of muscle and tendons mixed with blood-clot (this latter type is more commonly seen when bone has been disrupted in the track of the missile). Occasionally the exit wound may be small and punched out; it is then very liable to be mistaken for the wound of entry, especially if the latter is overlooked through being small and sealed off, and it may be assumed that the projectile is still present in the body. It is therefore necessary that the body should be completely searched to ascertain whether one or two wounds are present. If the bullet has damaged only skin and superficial fascia, a gutter wound will result.

Operation.—These patients will come to the surgeon in the casualty clearing hospital with dressings, probably impregnated with antiseptic, already applied at the dressing station, but this does not in any way relieve him of his responsibility for removing these and exploring and excising the wound track at the earliest possible opportunity. To facilitate the tracing of the entire track it may be useful to inject with a Higginson syringe a quantity of some coloured fluid, such as a 1 in 1000 solution of brilliant green or of acriflavine, or a 1 per cent. solution of gentian violet, but usually this is unnecessary because of the destruction of tissue and hæmorrhage in and round the track. In every case aim should be complete excision followed by suture of the tissues to secure perfect coaptation throughout the whole depth of the wound, with the avoidance of any undue tension on the sutures and tissues. If any doubt exists about the completeness of the excision of all damaged tissues, drainage of that area must be carried out for 24–48 hours, and any part of the wound which cannot be approximated without tension must be left unsutured to secure union by granulation or, if the wound is deep and extensive, by coaptation of the granulating surfaces at a subsequent operation in a few days' time (secondary suture).

In a gutter wound complete excision is simple and straightforward, and primary suture without drainage can in all cases be carried out. In dealing with these wounds no more skin should be sacrificed than is absolutely necessary. In perforating wounds, however, complete excision is not so easy, unless the track is short and straight, when it should be excised in its entirety. With deep and tortuous wounds the best method is to excise the mouth of the wound in the shape of a funnel, to pass a finger or a probe along the wound track, and to cut down on it directly from the surface so far as such finger or probe reaches. The finger is then passed on to the next section of the track, which is opened from the surface, and so on throughout the complete length of the track, always provided that such a procedure can be carried out without damage to important anatomical structures, such as nerves, veins, and arteries. Where these are lying superficially to the track it must be cleaned out in that section by dissection without slitting it to the outer area. When the whole track has been thus laid open it can be carefully explored after the excision of all damaged tissues and debris. Thereafter damaged vessels must be carefully ligated, for thorough hæmostasis is essential in securing good union without infection, and any damaged nerves must be sutured and should if possible be laid in undamaged muscle tissue to prevent adhesions round the suture line. The track can then be obliterated by deep catgut sutures, drainage being provided if necessary, the overlying tissues sutured, the wound dressed, and the area splinted to secure the rest which

is so essential to rapid and sound healing. In very deep wounds the surgeon may be tempted to try tunnelling dissection for fear of damage to overlying structures; but this is not advisable, for such excision is never thorough and is unlikely to succeed in its object. The greatest care must be taken to excise the first 4 in. of the wound track, for this is the area where infection is most likely to be present and where it will be most severe. The track may be found on exploration to enter one of the body cavities. In the case of the abdominal cavity, the track must be excised down to and including the peritoneum and a laparotomy then performed to ascertain what damage has been done in the peritoneal cavity. As a general rule the same principle should be used in the thoracic cavity, though here more discretion is permissible, provided that no severe respiratory distress is present and that there are no obvious signs of active hæmorrhage.

LACERATING WOUNDS

Lacerating wounds may be very severe if due to high-explosive bombs and may involve the avulsion of entire portions of the body or evisceration of the victim. In such cases, if the patient is still alive, the periphery of the wound must be excised, displaced viscera cleaned, repaired, and replaced in their natural positions or excised if greatly damaged and their retention is not essential, and the wound closed as far as possible without tension. The chances of recovery in these cases is very small. Many cases of severe laceration or crushing of the soft tissues of a limb are due to either high explosives or falling masonry. These wounds are often complicated by open fractures and wounds of joints. In the early stages with these injuries the patients appear to be remarkably well and show very little signs of shock, especially when a tourniquet has been applied round the crushed limb to arrest hæmorrhage. After the removal of the tourniquet, however, severe collapse occurs, and the only way to save the lives of most of these patients is prompt amputation of the damaged member above the already applied tourniquet if feasible. This may sound drastic, but the patient's life is thereby saved; moreover, should attempts at conservation of the damaged limb prove successful, the ultimate result is usually a useless or nearly useless limb and a long and extremely painful convalescence.

Operation.—All lacerating wounds *must* be treated by free excision of all damaged tissue round their periphery. A guide to the extent of tissue to be removed is the meeting of spurting blood-vessels and muscle which contracts when stimulated. This ensures that all mangled and crushed tissue has been sufficiently removed. Hæmostasis must be secured, but it is seldom possible to approximate the ends of damaged nerves, for large portions of these are often avulsed, and in these cases the nerve-end should be trimmed and ligated, the ligature being left long and projecting from the wound so that the end of the nerve can be readily identified, and infection into its sheath so far as possible prevented. The perforated end of such nerves can subsequently be implanted into neighbouring nerves or some other method of nerve repair used, but no such attempt should be made when excising the wound unless by any chance the two damaged ends of the nerves can be approximated without tension. No attempt should be made to obtain union of the edges of these wounds unless this can be done without tension of the tissues.

Dressings and splints.—The wound can with advantage be dressed with a 10 per cent. solution of hypertonic saline or, if a large area is involved, a 1 in 1000 solution of acriflavine in oleum ricini, which is non-irritant and painless. In all cases the area in which such wounds have occurred must be secured at rest, if necessary by judicious skeletal splinting, for this goes far to assist healing, allay pain, and limit shock and infection. Should the wound be infected very great care must be taken to excise every particle of damaged muscle, for it is in these damaged muscles that the organisms of gas gangrene increase and flourish. Plaster-of-paris splints are applied as a routine in Spain.

BURNS

The commonest types of burns met with in an air-raid are (1) those due to incendiary bombs and the resultant fires; (2) those due to the back flash of shells and bombs; (3) chemical burns from mustard gas or lewisite; and (4) electrical burns. These burns are likely to be superficial but may be very extensive, and the consequent pain and collapse are therefore great. First-aid measures are directed primarily to the prevention and cure of this primary shock. Since the shock is caused in the first place by the pain, loss of fluid, and absorption of toxic substances from the burnt area, the first essential is to treat this by efficient coagulation. Various coagulants may be used, of which a 2–5 per cent. aqueous solution of tannic acid and a 1 per cent. aqueous solution of gentian violet are the most efficient, the former being preferable because it produces a much more penetrating coagulum. Tannafax jelly is useful in all superficial burns, and, if no other coagulant can be found, lukewarm strong tea is extremely efficient. In all cases of chemical burns it is essential that the causal agent should be thoroughly neutralised before the coagulant is applied. At the same time shock must be combated by keeping the patient warm and administering fluids and, if necessary, an injection of morphine. After this treatment, the burnt patient should be taken to a dressing station to rest for at least half an hour to recover before being transferred to a clearing hospital.

On admission to hospital the first essential is to anæsthetise the patient, if possible by means of morphine (which takes about half an hour to work), but in the rush of casualties in a raid it will probably be found that this has to be supplemented with gas-and-oxygen anæsthesia. Ether should be avoided if possible, owing to the risk of lung complications in these burn cases. Once the patient is anæsthetised, the dressings should be removed, and the entire burnt area and 6 in. of surrounding skin must be thoroughly washed with soap and water and a swab wiped over with methylated spirit and then with ether, after which, in the circumstances prevailing, the only satisfactory dressing is a compress of 2½ per cent. tannic acid to which perchloride of mercury has been added as an antiseptic in the strength of 1 in 2000. This compress is applied in the form of several layers of gauze or lint soaked in the tannic acid solution, which are laid evenly on the area and bandaged lightly but firmly in position. The area of the burn must be secured at rest, if necessary by splints, to allow an unbroken coagulum to form. These splints can be removed in forty-eight hours, except in the cases of deep burns in the neighbourhood of joints where contractures may result from scarring, in which case the splints must be maintained until healing has been obtained. The compress is left undisturbed for two or three weeks and then removed, when the scab gives way naturally and the underlying tissues will be found normal unless the burn is

sufficiently deep to destroy the entire depth of the skin. (The spray method and the gentian violet treatment are not feasible in the rush entailed in a clearing hospital.)

The efficiency in treatment depends on thorough cleansing before coagulation, and, if this cleansing has not been efficiently carried out, sepsis will intervene, as indicated by pain, rising temperature, and a discharge of pus from beneath the bandages. When this happens, the whole dressing must be removed and a dressing of a 1 per cent. solution of gentian violet applied on two thicknesses of gauze after the area has been cleaned. This gauze is to be re-damped with gentian violet at hourly intervals at least six times and more often if a firm coagulum has not formed.

Burns due to mustard gas.—If the patient has not already been decontaminated, it is impossible to assist him before donning protective clothing and a gas-mask. For the same reason all such casualties must be immediately isolated and have their clothing removed and decontaminated before they are admitted to the hospital wards. If possible a ward should be reserved solely for this type of case. The patient's gas-mask should be adjusted and all contaminated clothing removed, labelled, and placed in special receptacles, which may be oilskin sacks or tanks filled with a solution of bleaching powder; if bags are used, they should be conveyed to a steam steriliser for decontamination. The patient, having been freed from contaminated clothing, should be immersed in water and thoroughly washed with soap and changes of water for at least five minutes; alternatively, the part should be washed for several minutes with a 2 per cent. solution of sodium bicarbonate. After this, if actual contamination is suspected, and as a first-aid measure if no bathing is available, the skin should be well rubbed with a cream of two parts of bleaching powder to one of vaseline; or a paste of bleaching powder and water should be applied to the area and left there for five minutes before removal. Bleaching powder must not be allowed to get into the eyes and should not be used if there is an obvious burn of the skin. The patient can then be clothed in clean garments and put to bed.

Mustard gas can be present on the skin for 5–10 minutes before any burn occurs, and any of the oily fluid found should be carefully mopped off with cotton-wool and the area sponged with methylated spirit and then treated with anti-gas ointment. When a burn has occurred it should be treated, after neutralisation of the gas, with a tannic acid compress as already described. The eyes, if affected, should be irrigated with a 2 per cent. solution of sodium bicarbonate, and subsequently a drop or two of castor oil, containing 1 per cent. atropine, should be left in the eye.

Lewisite burns immediately; otherwise treatment is the same as for mustard gas.

Cordite burns.—In burns due to the back flash of shells or bombs (cordite burns) the area must be thoroughly sponged with a 5 per cent. solution of sodium bicarbonate before cleaning and applying the coagulant; otherwise their treatment differs in no way from that described.

Electrical burns are often immediately fatal. If the patient survives, great and persistent shock occurs, and pain, although it may be absent at first, develops after twenty-four hours, is very great, and may continue for months. The lesions, which are usually small and occur at the points of entry and exit of the current, may vary from erythema to gangrene, and the healing is very slow and often accompanied by extensive sloughing. The treatment is to clean the burnt area and to apply a coagulant, and sedatives will have to be given for the pain. Veganin is extremely useful for this purpose but may be supplemented with morphine in some cases, though every effort should be made to avoid the use of morphine and to discontinue it as soon as possible, for there is a great tendency for these patients to develop a morphine habit.

WOUNDS OF BLOOD-VESSELS

In air-raid wounds lesions of vessels and soft parts alone are seldom seen. The missile strikes the body with such force that the neighbouring bones are almost always involved and at the same time other lesions occur. An illustrative case was related to one of us by Dr. Trias of the Hospital Clinico of Barcelona. He began by operating on an extensive wound of the thigh involving the femoral vessels. A small wound of the buttock was next noticed and the abdomen was opened to repair a visceral injury. After this a tiny scalp wound was observed—this was left alone, but the patient died a fortnight later of septic meningitis. The vessels may be completely severed, torn laterally, contused or injured in such a way that the intima and media are more or less intact, while the outer coat is torn and weakened. In wounds of the limbs it is common to find both artery and vein damaged at the same time, together with collateral branches and tributaries. In avulsion or crushing of a limb the main vessels may sustain such damage that they become sealed and no longer bleed. In large lacerating wounds of the soft parts damaged vessels may be found during the routine surgical treatment, and, on the other hand, it is possible for small penetrating bomb fragments to damage a large vessel, such as the jugular vein, at the same time making a very small external wound.

Contusion of large vessels is due either to the direct impact of a spent fragment or to the disturbance caused by the passage of a high-velocity missile in the immediate neighbourhood of a large blood-vessel. Although the vessel may look normal when exposed, it will probably be pulseless and hard owing to thrombosis. Sencert distinguishes three varieties of contusion:—

1st degree: damage to the intima alone—fine transverse striations.

2nd degree: damage to intima and media, with occasional thrombosis.

3rd degree: more extensive damage with retraction and thrombosis.

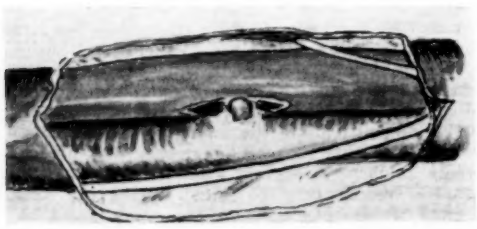
Primary thrombosis occurs early in these cases, and the firm white fibrin can be distinguished easily. Later, secondary thrombosis occurs, the clot being red, soft and easily expelled, like paste from a tube. These secondary clots may extend into the branches of the vessel and interfere with the establishment of the collateral circulation.

Hæmatoma.—If the wound of entry is small a large amount of blood may collect in certain situations, such as the neck, axilla, thigh or calf. In recent cases soft clots and fluid blood are found. As a result of increased local pressure the circulation of the collateral vessels becomes affected, the parts below become devascularised and gangrene may supervene.

Concomitant lesions.—The possibility of adjacent nerve-trunks, tendons and other structures being injured at the same time as the vessels must not be overlooked, and the surgeon must not be content with dealing with the damaged vessels alone. The

importance of cutting away devitalised muscle and of removing septic fragments of clothing and foreign bodies has been mentioned in a previous article (*Lancet*, Jan. 21, p. 171).

Hæmorrhage.—The general effects of hæmorrhage have already been described (*Lancet*, Jan. 28, p. 229). The serious consequences of allowing severe traumatic anæmia to remain untreated must be thoroughly appreciated. A casualty with a rapid pulse-rate after the receipt of a severe lacerating wound is either suffering from the effects of hæmorrhage or the onset of gas gangrene, or both conditions. All personnel engaged in *first-aid treatment* must be taught to look for hæmorrhage cases first and to apply *immediate* treatment. A pad, improvised or otherwise, is pressed into the wound and held firmly until a dressing and bandage can be applied. If an artery is bleeding, pressure is applied to the appropriate pressure-point until the dressing is in place. All wounds of the lower limbs are to be treated as stretcher cases. The tourniquet is not to be used indiscriminately but only when it is certain that a large artery is bleeding or when a limb has been torn off, in which event it must be applied as close above the wound as



Gunshot wound of both vessels in Hunter's canal. The missile passed between the vessels, cutting the outer coat of the artery and opening the vein. At the operation the vein was sutured and the artery repaired by sewing a flap cut from the roof of the canal round the bulging inner coats. Patient made a complete recovery.

possible. A simple type must be selected, and one that can be efficiently and rapidly applied, even in the dark. In air-raids this treatment should be carried out by police, firemen or air-raid wardens.

At the dressing station a small operating-theatre, with a surgeon and team, should be available for dealing with urgent wounds of the blood-vessels. Hæmostasis may be temporarily secured by merely suturing the skin over a large wound and firm bandaging, by the application of pressure forceps, or in some cases ligature. It may be necessary to transfuse such patients before they are evacuated. Each case should be distinguished in some special way—e.g., by a red label.

At the casualty hospital cases of hæmorrhage should be sought for in the reception room by the receiving officer and given priority. If bleeding has ceased, some of the patients will require resuscitation before being sent to the operating-theatre.

Operation.—A few special instruments are required: clamps for temporary arrest of hæmorrhage (Lynn Thomas's); needles and fine suture material; and Kocher's metal tourniquet. In urgent cases a blood-transfusion may be given immediately before or at the beginning of the operation.

The general principles of blood-vessel surgery include (1) the making of an adequate incision to ensure wide exposure of the parts involved; (2) temporary hæmostasis by the application of a tourniquet (Kocher's metal pattern is very useful) or by temporarily clamping the main vessel above the site of the wound, by an instrument such as the Lynn Thomas's tourniquet forceps; and (3) dissection of the vessels involved.

When the lesions have been found the following procedures may be indicated: ligature of the artery or vein; simultaneous ligature of the main artery and vein; suture of artery or vein for complete tears; suture of the outer coats of either vessel and thrombectomy for contusion of the vessel with thrombus formation and stoppage of the circulation in the affected limb. If the vessel has not already been completely divided, it is safer to complete the division and ligature each end separately, rather than to ligature in continuity.

Sir George Makins pointed out in 1917 the advantages of simultaneous ligature in dealing with a wound of a large artery, when the corresponding vein was intact. After ligature of the vein as well as the artery the already diminished volume of blood is retained in the limb for a longer time and therefore improves the conditions necessary for the preservation of its vitality. In one series of cases personally observed in France, simultaneous ligature of the superficial femoral vessels was performed nine times, and of the popliteal vessels four times, with successful results in seven and three of the cases respectively.

In war surgery suture of arterial wounds is disappointing; time is wasted, and thrombosis generally supervenes. The blood-flow may, however, last long enough to allow the collateral circulation to develop. The same remarks apply to the use of Tuffier's tubes. Venous suture is simpler and more satisfactory. The suture material is kept in sterile liquid paraffin, with the needles threaded, ready for use. Plastic operations, for the repair of the outer walls only, are interesting. In these cases the possibility of damage to the intima must be remembered. Fascial transplants can be stitched over the weak spot. Sometimes the inner coats are seen bulging through the tear in the outer sheath, like the inner tube of a bicycle tyre through a tear in the cover (see figure).

Thrombectomy may occasionally be a useful procedure. Cases have been recorded in which, after a large thrombosed artery had been opened and clot removed, the circulation has been re-established temporarily, but long enough to save the limb.

The application of the principles here described will enable the surgeon to deal with injured blood-vessels in any part of the body. On the whole the results of ligature of the large trunks are good. Amputation can always be resorted to later if necessary, and the patient should always be given a chance. In the aftercare of these cases it is often wise to splint the limb to afford perfect rest for the first few days. Where plaster treatment is adopted as a routine, the wound will not be disturbed for a fortnight, and the additional covering to the limb will assist in maintaining warmth. Occasionally, during an operation on either the thorax or the abdomen for a penetrating wound, a torn vessel is the only injury found. Ligature and application of the usual technique may save life.

The BRITISH JOURNAL PHOTOGRAPHIC ALMANAC for 1939 describes new developments and instruments for photography and gives details of the various processes. Short notes are included on such diverse matters as copyright, reproduction fees and the properties of chemicals used in photography. The almanac well maintains its reputation for usefulness, and is available in paper and cloth covers from Henry Greenwood and Co., 24, Wellington Street, London, W.C.2.

PANEL AND CONTRACT PRACTICE

Incapacitating Sickness in Scotland

THE Department of Health for Scotland has just published the seventh of a series of annual reports on incapacity from sickness among insured persons in Scotland.[1] The report, which relates to the year ended June 30, 1937, is particularly interesting since it contains, in addition to the usual detailed analysis of incapacity according to illness, locality, age, sex, and marital status, an account of a special investigation which indicates that in spite of the exceptionally large volume of incapacitating sickness recorded, equivalent to 14·92 days per insured person, about 75 per cent. of the insured population were at no time incapacitated during the year.

The total number of insured persons in Scotland for the year 1936–37 is estimated at 1,787,700, of whom 66 per cent. were men, 29 per cent. single women, and 5 per cent. married women, and the number of days of incapacity per insured person in each of the three classes was 14·13, 15·60, and 21·27 respectively. Respiratory diseases, chiefly influenza and bronchitis, formed the main certified source of incapacity, causing 20 per cent. of the total days of incapacitating sickness. Next in frequency came diseases of the nervous system and organs of special sense; rheumatism caused 12·5 per cent. of the sickness, accidents 7·4 per cent., and tuberculosis 6 per cent. There was an epidemic of influenza in the early months of 1937, the most severe experienced in in the seven years covered by the series of reports, and the incidence of incapacitating sickness was heavier than in any previous year. Apart from influenza, however, the trend of sickness has been upward since 1931–32, the average number of days' incapacity per person having risen from 8·8 in that year to 11·2 in 1935–36 and to 10·9 in 1936–37.

In previous reports it was shown that a high proportion of the total working days lost by the insured population through sickness is due to the chronic invalidism of a comparatively small number of insured persons. Such persons form a group that seems to correspond, comparing health insurance with unemployment insurance, to the "hard core" of unemployed workers who year after year are unable to obtain employment though not necessarily unemployable. In order to explore the subject further, the department undertook a sample investigation into the sickness experience of six approved societies having a membership regarded as representative of the whole Scottish insured population. The recorded attacks of incapacitating illness upon the members of these societies were specially associated so that it was possible to say how many times a member had been incapacitated during the year. Applying the results of this sampling to the whole insured population, it appears that in the year 1936–37 the percentage of persons continuously incapable of work throughout the year was 1·7; that 23·5 per cent. were incapacitated on one or more occasions; and that 74·8 per cent. were entirely free from incapacitating sickness. The high proportion of persons in the third group is the more remarkable since the year covered by the investigation was one in which influenza was exceptionally prevalent.

Though the incidence of unemployment due to sickness was heavy on the Scottish insured population —for the total number of working days lost was no less than 26,673,980, or an average of 14·92 days per insured person—nearly three-quarters of the insured people were free from incapacitating illness throughout the year. This conclusion, though it speaks well for the general health of the Scottish workers, throws into relief the gravity of the problem created by the "hard core" of chronic incapacitating illness. The number of persons continuously incapable of work during the whole year was 30,754, forming only 1·7 per cent. of the insured population, but their days of incapacity, 11,225,000, accounted for two-fifths of the total days lost owing to sickness. Moreover, the volume of chronic incapacity is increasing. The number of "chronic" cases—i.e., cases of incapacity extending over the whole of a year under review—per 1000 insured persons has risen from 12·9 in 1931–32 to 17·2 in 1936–37, and a further rise may be expected as the insured population ages in consequence of the decline in the birth-rate.

The prevalence of chronic incapacitating sickness is one of the most formidable of the problems that now confront health-insurance administrators.

1. Edinburgh. H.M. Stationery Office. Pp. 111. 9*d*.

Post-confinement Pregnancy

Two practitioners who issued certificates of incapacity to women who had recently been confined, giving the cause of incapacity as pregnancy, have appeared before a medical service subcommittee and received warnings as to the necessity for scrupulous care in issuing certificates. In the first case the certificate was given by a locum and the principal practitioner said that he would probably have ascribed the incapacity to anæmia and debility following pregnancy, for in his opinion many post-confinement cases of debility were the result of the pregnancy rather than of the actual confinement. In the other case the doctor said that when he gave the certificate he was not in any doubt as to the confinement having taken place, and that he used the word "pregnancy" deliberately, for in his opinion the debilitated condition of the patient was due not to the confinement itself, but to the repeated pregnancy after a very short interval. He was not familiar with the provisions of the appropriate certification rule but if he had been he would not have certified differently.

The subcommittee's report says that it is difficult to understand the attitude of mind of a practitioner who certifies that a woman is rendered incapable of work by reason of pregnancy when she is not, in fact, pregnant. The word pregnancy can have only one meaning—viz., that the woman in respect of whom the term is used is with child. If the woman has already been confined it is obvious to anyone that the condition of pregnancy has passed. The certificates which a practitioner issues are usually intended for submission to approved societies whose officers are lay people, and it is essential that they should be so worded as not to mislead those officers. In the subcommittee's view the argument adduced by the practitioners suggested ingenuity rather than conviction, and they advised that in cases in which incapacity is due to post-confinement debility it is desirable to give the condition that name on a certificate. Few will quarrel with this summing-up of the position in relation to pregnancy, though there can be little doubt that certificates of incapacity due to appendicitis are often issued and passed without question by approved societies after the inflamed appendix and the patient are known to have parted company.

LETTERS TO THE EDITOR

STIGMA AND PREJUDICE

SIR,—It was refreshing to read the sensible annotation under this heading in your last issue. The change of name from "asylum" to "mental hospital" was a justified concession to popular prejudice; though it is unlikely to have any permanent effect on the attitude of the public unless it is accompanied by a corresponding change in the "atmosphere" of the institution and the methods of treatment employed. To change the name again, however, from "mental hospital" to "hospital for nervous disorder" is not only unnecessary but also illogical to the point of practical inconvenience. How is the lay public to distinguish between a "hospital for nervous disorder" and a "hospital for diseases of the nervous system"?

Similar arguments apply to the naming of psychiatric outpatient clinics. Perhaps it is true that "psychiatric" is too "difficult" a word. What term, then, should be used? If "mental disease" is thought to sound too ominous, the milder and wider term "mental illness" seems the obvious alternative. We are asked to omit the word "mental" and substitute "nervous" or "nerve." To do this however is to perpetuate a serious misconception, and must hinder to some extent our efforts to get the psychoneurotic patient to understand clearly that he is suffering from an illness of his mind rather than of his body. In my experience, patients easily understand a simple explanation of the difference between psychoneurotic and psychotic types of mental illness. Psychiatrists are apt to be unduly "defeatist" in their attitude to the education of the general public on this subject.

The name borne by a psychiatric outpatient clinic is not, in the long run, of great importance from the point of view of attracting to the clinic those who need its help. In actual practice, no clinic conducted on progressive lines in a large centre of population is likely to experience a lack of patients.

There has also been much discussion recently as regards *where* psychiatric outpatient clinics should be held. The question is apt to be obscured by conclusions erroneously drawn from clinics that have been established in places where the circumstances are peculiar. Thus in St. Albans, owing to its proximity to London, there is no first-class general hospital, but the county mental hospital is close at hand. It is therefore natural that the excellent psychiatric outpatient clinic which has been developed by Dr. W. J. T. Kimber should be located at the mental hospital.

The ordinary provincial city, however, usually possesses a large and well-equipped general hospital, and often is some distance from the local mental hospital. In the provinces, therefore, it is generally desirable for the outpatient clinic to be held at the local general hospital. The status of such a hospital as the chief medical centre of the city enhances the prestige of the psychiatric clinic in the early stages of its development, and is of great assistance in attracting patients to the clinic. At the general hospital, moreover, skilled laboratory and radiological services are available, and also the consultative help of general physicians and surgeons.

I am, Sir, yours faithfully,

STEPHEN A. MACKEITH.

Warwickshire and Coventry Mental Hospital, Feb. 6.

CORRECTION OF POSTURE

SIR,—In reply to Mr. Bailey's comments on my letter of Jan. 7 on the Feet of the Industrial Worker I would state that re-educative exercise as practised by the members of the Chartered Society of Massage and Medical Gymnastics is an integral part of the orthopædic plan for reconditioning cases of poor posture. The aim of the instruction is to promote good habits in the correct control and in the right use of the body statically. The test of the final value of the training is seen when the instruction is over. Teaching, to be of real use, must awaken the patient's sustained interest in maintaining a good position. Exercise is, therefore, a means to an end. Goldthwait's system of exercises is to be advised. In aggravated cases, however, the anti-gravity muscles are overstretched and fatigued. There is erroneous deflection of the body-weight referable to the spine and lower extremities. Physiological deformity is present. Such deformity still further weakens the spinal and abdominal muscles. These factors all depreciate muscle power, just as they do in conditions such as poliomyelitis. The spinal muscles become adaptively tensed and fixed.

Overstretched and fatigued muscles—in the spine and abdomen in this case—often require at first a period of rest with relaxation in recumbency to eliminate gravity and weight-bearing and to intercept unbalanced use of the muscles. Physical therapeutics must subserve these principles. Exercises applied at the wrong time may well make strong muscles stronger, but they also make weak muscles weaker. It follows that the rest has to be of a corrective nature to straighten out the spine, to expand the chest, and to get rid of the adaptive fixations of the spinal muscles. This is best done in selected cases by a period of several weeks' complete and thorough rest in bed, the patient lying on the back on a mattress stiffened with fracture boards. He is given a small pillow beneath the head and knees. Thrice daily for half an hour after meals an extra pillow is placed beneath the thoracic spine, leaving the lumbar spine unsupported. He lies thus with his hands up behind his head, thus expanding the chest and opening up the subdiaphragmatic space. As he gets used to this leverage—beginning often with ten minutes and working up to a maximum of half an hour—the head pillow may be removed. This is called the position of hyperextension, and, when it is being adopted, the patient is instructed in deep diaphragmatic breathing, keeping the lower abdomen contracted in doing so. After each half-hour period of hyperextension he is made to lie over on the face for half an hour, with a pillow placed lengthwise beneath the trunk. He then goes back into the first position. He is not allowed out of bed, but may sit up to meals. The slowly applied but sustained corrective leverage of this treatment is considerable and has to be used with care by the doctor. At first the lumbar spine is found to be in a state of fixed lordosis in many cases. If such a case is examined in about a fortnight the spinal fixity will be found to be improving and the lumbar spine to lie flat. Too little use is made of rest in restoring the tone of muscles. It means patience and passivity, but there can be no short-cut when rest is really indicated. Other methods are more pleasurable, less irksome, and therefore more popular, but to obtain lasting benefit, rest, along the lines indicated, should be insisted upon.

It is at this phase of progress, and only then, that treatment by spinal massage and muscle re-education begins. The recovery of tone and of muscular responsiveness must precede re-education in their control. These control exercises are taught in recumbency. The patient is taught to flatten the lumbar spine and to contract and "set" the side abdominal muscles alternately. The abdominal muscles are strengthened by suitable exercises. At the end of several weeks we have a patient whose body is remodelled, with supple controlled muscles, and with the fixity of the spine corrected, and one who knows how to breathe correctly with an elevated chest. Any persisting fixity of the spine may be assisted by passive corrective movements and manipulations. A posterior plaster shell may be useful in slender visceroptotic subjects, made in the corrected position.

The next stage in breaking the patient's bonds is to teach him how to stand, sit, and walk erectly. He is now in a position to profit by this instruction in control. Ere long it becomes habitual, because, as Magnus has shown, if improved posture is maintained by conscious effort for a short time of a few weeks, then the increase of reflex tonus obtained by such posture will serve to maintain and to improve the attitude as a habit. Then the orthopædist usually fits on a light spinal brace which spans the lumbar curve, for use as a useful and temporary makeshift when the patient is up until all chance of relapse has gone. The order in which all these measures are used is of great importance—namely, corrective rest, re-education, and support. The support is simply a reminder to the patient and his muscles that he must not fall back into his old ways. The treatment has a mental as well as a physical basis. The patient's interest and sustained powers of coöperation must be enlisted. The psychological aspect of many orthopædic conditions is of the first importance, because the structures which the surgeon wishes to influence are under the control of the patient's will.

A graduated modification of the above regime may have to be kept up for a long time, planning resting periods in the day and so on. The patient's clothing must be examined, so that no constriction of the chest or drag on the shoulders takes place. The chair and desk he sits at during his daily work must be inspected and put right. Tonic, nutritional, and supportive treatment may also be called for. But in time our patient gradually moves up the hill of recovery and attains to right use of the body, feet, and all! Let him be seen in, say, a year's time, and instead of a weedy looking specimen of humanity there often is a splendidly erect man with good vitality and good mental, visceral, circulatory, nervous, and muscular tone. His previously weak, unbalanced, and fixed back is now strong, beautifully balanced, and flexible. This is the reward of all that has gone before. To the uninstructed, small variations from correct use mean little or nothing. If they are noticed, little practical recognition of them is usually made. I call to mind a slender, badly postured, semi-invalid visceroptotic type of female patient with symptoms of duodenal ileus upon whom an operation was considered. By treatment conducted along the lines indicated, in two years she was cured of all her symptoms, had put on two stone in weight, and became erect and energetic. In a formal discussion on visceroptosis I once ventured to submit that great improvement was possible by orthopædic measures. The speaker then told me that if I wanted to try to make silk purses out of sow's ears I was welcome to try! This is an attitude of defeatism which is far too common.

From the description given, it will be appreciated that much detail requires careful and constant attention, but this is the price of success. It must be done properly or not at all. In orthopædics I would like the guiding note to be that of the establishment of perfect use and a keen appreciation and understanding of what all this must mean in regard to the physical education of the young and the rehabilitation of the chronic case, in whom imperfect use is so common. Think what it would mean to the people of this country if this aspect of orthopædics had a foremost place in medical teaching and practice. Has orthopædics in this sense, Sir, ever been applied as it should be in this country? I beg leave to doubt it, and yet it is of the first importance in regard to national fitness in the best and highest meaning of the term. We must apply our minds to states of early physiological dysfunction of the locomotory system and seek to prevent and intercept them by putting in a stitch in time.

I am, Sir, yours faithfully,

Edinburgh, Jan. 30. W. A. COCHRANE.

RENAL CHANGES IN MALIGNANT HYPERTENSION

SIR,—Prof. Duguid contends that the picture described by us as occurring in the rat kidney after partial occlusion of the opposite renal artery is not the picture of chronic interstitial nephritis, that the tubular changes we have described are such as may be caused by severe toxæmia or by dietary disturbances, and that our evidence cannot be said to support the concept of malignant hypertension.

If these criticisms are justified then our work, so far from forming "a valuable new contribution to the study of vascular disease," merely adds to the dismal confusion which envelops the subject. We cannot, however, let them pass unchallenged. We are content to let your readers judge from our photomicrographs how closely we have reproduced in the rat the *essential* vascular, glomerular, and tubular lesions of "chronic interstitial nephritis" or "malignant nephrosclerosis." We were careful to point out that the extent of renal damage and interstitial fibrosis is greater in the later stages of malignant hypertension than in our experiments, but this is a difference of degree, and not of kind. We specifically described the occurrence of interstitial fibrosis in the rat. Thus on p. 138 "others (i.e., other tubules) are atrophied, devoid of lumina, and widely separated by interstitial fibrosis." Moreover, interstitial fibrosis is quite clearly illustrated in fig. 15. Yet according to Prof. Duguid we "venture to explain the *absence* (our italics) of interstitial changes on the ground of the short duration of the experiments." However unintentional, this is sheer misrepresentation of our findings.

As regards his second point, the fact that tubular degeneration and atrophy can be caused by severe toxæmia or by highly artificial diets has no bearing on our argument. It is clear from our illustrations that the damaged tubules are in close anatomical relation to the affected vessels and glomeruli, the whole forming a specific composite lesion. If this lesion were due to toxæmia (whatever that may mean) it is remarkable that the "clamped" kidney should escape.

Prof. Duguid is of course free to draw what inferences he cares from our illustrations, but we can find nothing in his letter to persuade us to retract or modify our own conclusions—namely, that the lesions in the rat's kidney are due solely to hyper-

tension, that they tally in all essential characters with those of malignant hypertension, differing only in the degree of renal destruction, and that our experiments support the concept of malignant hypertension.—We are, Sir, yours faithfully,

C. WILSON,
F. B. BYROM.

Medical Unit, London Hospital, E.1, Feb. 6.

THE AIR-RAID

SIR,—I have read today the letter of your correspondent Dr. L. H. Lerman. Like him, I have been following with interest the articles written by Mr. Mitchiner and Mr. Cowell, giving us valuable instruction in the practical methods of dealing with the casualties among the civilian population which will surely result from an air-raid.

May I be permitted to give the result of my own experience in the prevention of postanæsthetic conjunctivitis? In the earlier years of practice I was frequently called upon to administer anæsthetics and soon standardised for myself the open method, using the Schimmelbusch mask. It fell to my lot to be, if not the first, very nearly so, to give open ether. One day in 1896 I was administering chloroform for an operation for the ligature of hæmorrhoids and at the dilatation of the sphincter ani the patient, a middle-aged man, collapsed. I had a supply of pure ether ready and at once poured about a drachm on the mask: the man's colour returned, his pulse recovered, and the operation was completed. Up to that time I had never given open ether nor had I heard of its being so given, though A.C.E. (one part of alcohol, two of chloroform, and three of ether) had been used at my hospital (Guy's) for several years. In the prevention of postanæsthetic conjunctivitis my usual practice was to rub in Vaseline round the eyes before commencing the administration. The patient's eyes were kept closed throughout the operation except for an occasional inspection of the pupil reflex. I would suggest that the method detailed is a satisfactory and practical one, and will give excellent results. No complicated anæsthetic apparatus is necessary and the simple procedure as above will, in my opinion, be suitable for use in war-time emergencies.

I am, Sir, yours faithfully,

Headington, Oxford, Feb. 4. H. W. WEBBER.

PROGESTERONE AND THE ADRENAL

SIR,—On Jan. 14 you commented on the work of Gaunt and Hays, who have reported success in maintaining adrenalectomised ferrets with injections of progesterone (*Science*, Dec. 16, 1938, p. 576). May we mention that about the same time we published observations on the same subject in the *Revue Française d'Endocrinologie* (December, 1938, p. 400)? We succeeded in prolonging the life of adrenalectomised rats of both sexes by injecting progesterone in daily doses of 4 mg.; the rats died when the treatment was discontinued. This dose is certainly very large but is not excessive, the rat unit of the most active cortical fractions known hitherto being 0·5–1·0 mg.

The next question we examined was whether the progesterone produced by the ovaries of rats had the same effect as the progesterone injected. We treated immature rats, males and females, before the adrenalectomy for three days with daily injections of 40 units of Lutocrescin, a gonadotropic hormone prepared from pregnant-mare serum; after the operation 20 rat units of lutocrescin was injected daily. The male rats died shortly after the adrenalectomy, the average survival-time being three days. Of 10 female rats treated, 2 lived longer than ten days; the rest died, but the average survival-time was six days. It seems therefore that immature female rats treated with a gonadotropic hormone produce enough progesterone to lengthen their survival after adrenalectomy.

We are not in a position to answer the question whether progesterone is or is not a product of the adrenal cortex, playing a definite physiological part also in adrenal regulation. The failure of the previous experiments of Swingle and collaborators was very probably due to inadequate dosage; it is, however, possible that progesterone acts only after a chemical transformation which some species are not able to perform. It seems at any rate very remarkable that the hormone which effects the morphological transformation of the uterus should also have an action on adrenal regulation of the general metabolism.

We are, Sir, yours faithfully,

ANTON FISCHER.
M. ENGEL.

Budapest, Hungary, Feb. 2.

CLINICAL USE OF STILBŒSTROL

SIR,—Dr. Varangot describes Dr. Muriel Boycott, Dr. Zuckerman and myself as being "enthusiastic" in our observations on this new synthetic œstrogen. I am sorry that he should have obtained this impression, for we attempted to report our findings without the expression of any emotion. Among others we were invited by the Therapeutic Trials Committee of the Medical Research Council to test the œstrogenic properties of stilbœstrol on monkeys and human females. This was merely the logical extension of the work of Parkes, Dodds and Noble on the biological activity of this compound. Since the investigation was organised by a committee whose most important reason for existence is the ability to register an impersonal and unbiased opinion, it would be singularly unfortunate if any report to that body were couched in terms which could with justification be regarded as expressing any such unscientific emotion as enthusiasm.

Discussing the possible "toxic" effects of the compound we were of the opinion that in view of the rarity with which these occurred in our experience and the mildness of their manifestation, it was not justifiable to cite them as a serious contra-indication to the use of the preparation as an œstrogenic agent.

Up to date I have personal experience of 66 patients treated with stilbœstrol, almost four times as many as the number quoted by Monsieur Varangot, and the doses given have sometimes been much larger than those he mentions. Of these only 6 have complained of transient nausea, unaccompanied by vomiting. I have recently had the opportunity of discussing the matter with Dr. Jacobsen, who has an extensive knowledge of the clinical use of this preparation in Scandinavia, and he expressed interest and surprise in the experiences of Dr. Varangot. I am aware of toxicity tests on animals which have failed to show liver damage after the application of large doses of the material.

All that can be said at the moment is that our results do not coincide with those of Dr. Varangot.

Further experience is needed to assess the importance of the toxicity factor. In the meantime may I assure Dr. Varangot that it was not our purpose to advocate the use of stilbœstrol in preference to other œstrogens. Advocacy is a feature of commercial pamphlets, of which there has been a spate

during the past month; and judging from the fact that the indications commercially given for the use of stilbœstrol include such conditions as habitual abortion, we may expect more surprising effects than nausea and vomiting from the promiscuous use of this compound.—I am, Sir, yours faithfully,

P. M. F. BISHOP.

Endocrine Clinic, Guy's Hospital, S.E.1, Feb. 6.

EXAMINATION FOR INSURANCE COMPANIES

SIR,—I have recently been approached by an insurance company with the request that I should examine on their behalf and report on a patient who was involved in an accident some months ago and who is under the care of a neighbouring practitioner. There was no suggestion that the practitioner concerned should be notified, or that I should meet him in consultation on the case, and I have agreed to act for them in the matter only on condition that the consent of the patient's own doctor is obtained, and that I should see the case in consultation with him if possible.

At about the same time I was informed, after the event, that a patient of mine who had suffered an accident some weeks before had been examined by a medical officer acting on behalf of the interested insurance company. Again, the examination was arranged and carried out without my knowledge or consent, which, needless to say, I would not have withheld.

It seems to me that the sort of procedure outlined above smacks of the unethical, and it would be of interest to know whether such procedure is on the increase and if so whether it has the general approval of your readers.—I am, Sir, yours faithfully,

Baldock, Herts, Jan. 31. J. H. MOYNIHAN.

SELF-CONSCIOUSNESS AND PUBLIC SPEAKING

SIR,—The correspondence on this subject inspires me to remind your readers of an old tip for nervous, self-conscious public speakers. So simple. Just before you are due to speak, you touch the tip of your tongue with the glowing end of your cigarette. The reaction short-circuits the inhibitory impulses responsible for stammering and allied phenomena of a distressing character. And if you, an Englishman, are speaking in French, the burn may also give a lisping quality to your speech, infusing into it a note which your compatriots, if not your hosts, may interpret as Gallic.

I am, Sir, yours faithfully,

CLAUDE LILLINGSTON.

League of Red Cross Societies, Paris, Jan. 30.

LYMPHOGRANULOMA VENEREUM

SIR,—I have just read with considerable interest the abstract in your issue of Jan. 28 (p. 246) of an article on lymphogranuloma venereum (*Vida Nueva*, 1938, **42**, 465). The multiplicity of therapeutic agents which have been tried and the disappointing or negative results obtained in this disease are common experience and your comment that Pardo-Castelló et al. have not used sulphanilamide or similar chemotherapeutic agents is most pertinent. In this latter connexion you quote the experimental work of F. O. MacCallum and G. M. Findlay reported last July (*Lancet*, 1938, **2**, 136) and I would like, if I may, to draw your attention to a case of lymphogranuloma inguinale which I treated successfully with sulphanilamide and which was described in the *British Medical Journal* (1938, **2**, 1043). So far as I can ascertain this is the first case-record of its kind in the British literature, and although only one patient had been treated the report appeared justified by the small number of cases which are met with in this country and by the hope that chemotherapy would be employed by others with access to greater clinical material. As a matter of fact as a result of this case-report a large-scale trial of chemotherapy in climatic bubo was arranged and is at present being carried out in the East.—I am, Sir, yours faithfully,

S. M. LAIRD.

Special Treatment Centre, Shelton, Stoke-on-Trent, Feb. 2.

DIVERTICULA OF THE DUODENOJEJUNAL FLEXURE

SIR,—In his interesting paper in your issue of Jan. 28 Mr. Raven expresses his belief that this condition is a clinical entity with definite symptoms. He also states that the diverticulum passes inwards, upwards and to the *right*, being found on the *right* side of the flexure at operation. In 1937 I operated on a woman aged 70 who gave a history of attacks of epigastric pain for many years; no vomiting and no hæmatemesis but much flatulence. There had been an exacerbation of the pain, accompanied by vomiting, during the six weeks before she came under observation, the pain being relieved by vomiting. X-ray examination after a barium meal showed a diverticulum at the duodenojejunal flexure. Laparotomy revealed the scar of a healed ulcer on the lesser curvature of the stomach near the pylorus and a diverticulum situated on the *left* side of the flexure, passing upwards under cover of the inferior mesenteric vein towards the pancreas. The wall of the diverticulum was very thin. It was found necessary to retract the inferior mesenteric vein upwards in order to free the diverticulum from its surroundings and excise it. The line of Lembert sutures at the end of the operation lay on the left side of the flexure.

I am, Sir, yours faithfully,

Wimpole Street, W.1, Feb. 5. C. E. SHATTOCK.

PLACENTAL BLOOD FOR TRANSFUSION

SIR,—We would like to answer the interesting letter of criticism from Drs. Brewer and Howkins which appeared in your last issue. May we reply under the headings they suggest?

1. *Quantity.*—The average yield we report (80 c.cm.) is from fifty strictly consecutive cases. The only selection of cases we allowed was made clear in our original publication. The maximum yield from any placenta was 120 c.cm. We find that we have a continuous supply of blood from our maternity unit so that it is possible for us to discard the smaller quantities, and we now store only those flasks that contain 150–180 c.cm. of transfusible fluid. We do not consider this a negligible quantity, especially for emergency transfusions, but we do not suggest that placental blood will completely displace the blood donor. It will be a very useful adjunct.

2. *Sterility.*—We entirely agree with Drs. Brewer and Howkins that it is important to make this point quite clear. When we first started to collect placental blood we found that we had to experiment with the anticoagulant. It was some time before we finally decided upon the use of citrate saline; the early specimens were therefore discarded and the question of sterility did not arise. When the anticoagulant had been settled we began to culture all our specimens, with the results already reported. On looking up our records we find that only a few specimens of blood were given without previous culture having been done.

But is the blood obtained from a donor always sterile? May not a donor have a temporary staphylococcal or streptococcal bacteræmia when his services are required? Butler (1937) in her monograph on blood-cultures confesses that she obtained 5 per cent.

positive cultures from healthy individuals and quotes other bacteriologists who report positive cultures in 12–27 per cent. of cases. In the series of placental bloods collected by a trained team with adequate care we obtained only 0·5 per cent. positive culture.

Has Dr. Brewer, in his capacity as medical officer to the London Blood Transfusion Service, investigated the sterility of blood from donors?

3. With regard to the *feasibility of collection* by the "ordinary personnel of the labour ward" our experience is that collection is perfectly feasible with a little special training. Our own team consists of at least three and if possible four. Originally it included the resident obstetrical officer, a staff midwife and two pupil midwives: now that all the staff midwives are thoroughly conversant with the technique and have had the possible dangers of contamination explained to them, the collection of blood is left to the responsibility of the staff nurse in charge of the delivery, with the assistance of a second staff midwife and one or two pupil midwives. Unexpected medical supervision is maintained from time to time. It is perhaps significant that our maximum quantities have been obtained when a medical officer was in charge of the case, probably owing to the extra pair of hands.

We want to make it clear that we do not consider the method one that should be left to a maternity-ward staff without special precautions, and it is quite impracticable in the patient's own home or in any hospital where there are no adequate laboratory facilities. But in spite of the difficulties mentioned, and the criticisms made, we feel sure that it should not be abandoned, and we hope Drs. Brewer and Howkins will try it out again. We are surprised at the poorness of their average yield (47 c.cm.) and we feel that it could be improved upon.

We are, Sir, yours faithfully,

A. P. M. PAGE,
K. G. SEAGER,
E. M. WARD.

City General Hospital, Leicester, Feb. 7.

PROPHYLAXIS OF TUBERCULOUS EMPYEMA

SIR,—The article by Dr. L. Roberts in your issue of Jan. 21 is an excellent summary of the facts. The alarming frequency of this condition as a complication of artificial-pneumothorax therapy, and its appalling mortality, are too little realised by many who dabble in diseases of the lungs.

My main purpose in writing is to question the statement, dogmatically cited by Dr. Roberts without any qualification whatsoever, that when an effusion follows a spontaneous pneumothorax tuberculosis is the cause. Is this invariably the case? To my mind, from a purely theoretical consideration, at least one other possibility must occasionally be considered. If the lung does not expand pari passu with the absorption of the air from the pleural space a partial vacuum would be created, and to prevent this, nature abhorring a vacuum, fluid is poured out—an œdema ex vacuo.

The whole subject of the ætiology of spontaneous pneumothorax requires revision and authoritative opinion. Sweeping statements, such as that in question, if not absolutely correct, obfuscate rather than clarify the situation.

I am, Sir, yours faithfully,

Liverpool, Jan. 26. MAURICE H. PAPPWORTH.

LITTRITIS?

SIR,—I shall be glad if any of your philologically inclined readers can shed light upon the present spelling of the word "littritis." As editor of a medical journal, I have always inserted an "e" before the suffix in my spelling of the word, arguing that there is no valid reason for depriving Alexis Littré of the last and accented letter of his surname; but my contributors, pointing to Stedman and Dorland, maintain that such excision is sanctioned by both custom and euphony. My own feeling is that the correct way of spelling the name of this affection is "littréitis" and that the quadrisyllabic is quite as euphonious as the trisyllabic and philologically much more accurate; but I am open to conviction if there is precedent for the use of the latter.

I am, Sir, yours faithfully,

C. LOUIS LEIPOLDT.

South African Medical Journal, Wale Street, Cape Town, Jan. 24.

AUTOSERUM THERAPY FOR THE OPIUM HABIT

SIR,—Personal experience of autoserum therapy for the opium habit, as successfully used by Dr. Margaret Vivian (*Lancet*, 1937, **1**, 1221, 1239), may be of interest; perhaps even of help, for there must be some medical men addicted to this drug who would wish to end their degradation.

I had been taking opium about three years when I saw a note about the method in the "Medical Annual" for 1938. Six months ago I underwent a course of treatment lasting fourteen days, and seven days later I returned to practice. (I realise now that this time was rather too short and might well have ended in failure which would have been most unjust to the method; not because there was any craving for opium but because sheer physical weakness made work a real hardship.) The "withdrawal symptoms" were trifling. For a few nights I had to take some bromide and chloral to get sleep. Desire for food never failed. Further, the method is free from danger; not that that matters much. The one hardship is the great physical weakness, which makes every action, however slight, a burden. There is no sudden cutting-off of opium, but the amount is gradually lessened, and the addict is not aware that he has had his last dose. I am now able to do hard physical work without fatigue. I can once more take a full interest in life and fully exercise my mental powers.

For manifest reasons I must sign myself

Feb. 7. A. B. C.

THE LANCET 100 YEARS AGO

February 9, 1839, *p.* 719.

From an article on digestion by Mr. Henry Ancell.

. . . The proper function of the liver is believed to be that of acting upon the blood, venous or arterial, as the case may be, for the production of the bile, and the production of bile the end in view in furnishing an animal system with a liver. Conjectures have been thrown out from time to time that this organ, from its magnitude and situation, must be endowed with some more essential function, but none of these have been generally received as worthy of credence; . . . but I submit whether the liver is not an organ of digestion, properly so called, occupying the situation which it does for the purpose of preventing the passage into the general circulation of those soluble substances taken up by the branches of the vena portæ, which are likely to prove injurious to life, and for the purpose of affecting the first changes upon other principles, after their absorption. . . . I am inclined to think that every meal, and every species of food capable of perfect digestion, furnishes the elements of some of the principles of bile at the commencement of the process, which are conveyed by a kind of lesser circulation, somewhat resembling the smaller or pulmonary circulation, through the liver, to whose action it is submitted, in a circuit back again to the duodenum, for the completion of its own digestion and defecation.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM AUTOLYCUS

II—BOOKS AND BANQUETS

LAST week I threatened to return to the subject of medical authorship, and I have not relented. Those who are familiar with the classics of the last century, such, for example, as Gowers' famous and still unrivalled text-book, Byrom Bramwell's clinical lectures, or, to go further back still, Murchison's "Continued Fevers," will be keenly aware that the quality of medical writing is not what it was. In those leisurely days a man had time to think and authorship was for him a serious responsibility prepared for by years of careful clinical and pathological observation, and by the detailed recording of his material as it passed through his hands. Finally, in maturity he sat down to distil the essence of his experience and to inform it with his ripe judgment. He did not write simply because an enterprising publisher's traveller had persuaded him that there was "room on the market" for a work on his subject, and while he may not unreasonably have hoped that his book would enhance his reputation his prime impulse to write came from the knowledge that he had something to impart to his professional brethren. A clinical text-book of the first rank can be written on no other basis than that of personal experience and the capacity to live over again that experience as the writer sits down to his task. It was in such circumstances that the works I have named, and doubtless others that will occur to my readers, were composed, and thus it is that they still retain the breath of life, where much modern writing smells only of the lamp, and can yet be read with keen intellectual and artistic satisfaction even by those not specially interested, or deeply versed, in the particular fields of medical knowledge with which some of them deal. They were works of art as well as text-books. The charm of these older writers is most readily seen in their general descriptions of the course and features of some malady from its onset to its close. They had the conception of disease as a process, a sequence of events, representing a struggle between the organism—the individual—and some pathogenic agency. For them disease was not an entity having independent existence, but a chain of events. They told its story as a continuous tale, and gave each malady an individuality: that individuality by which the true clinician identifies it throughout the range of its variations. It is this quality that lends these clinical descriptions their vividness and life, and impresses them upon the mind in a way that a drab catalogue of signs and symptoms can never do. It would be ungenerous to maintain that we have not to-day a few text-books of this quality, but where so many are written it is inevitable that they should remain the rare and delightful exception. The truth is that the task of authorship is quite differently thought of now by many medical writers. They do not wait until they can write from their own experience, for authorship has perhaps become too deeply involved for its own good in this affair of career-making. Perhaps for text-books, as for memoirs, authors are born and not made, but even the born author should write from his own knowledge, acquired by personal observation, and not by compiling a composite précis from a pile of other men's books on the floor beside his desk. For a medical author the writing of a book should be the crown of his labours and not a first step on the ladder of a career. But if publishers will continue to tempt young men, they will go on writing, and the booksellers' show cases and shelves will continue to groan under the deadweight of stillborn works on medicine, while well-written, authoritative text-books will remain rare.

* * *

Now it was not for this solemn moralising that the editor designed me, but for something more in the nature of light relief, and it is time for me to revert to type. So I pass from books to banquets, from the sublime to the ridiculous, for medical banquets are never sublime and are often not sufficiently amusing to escape the ridiculous.

The Shorter O.E.D. gives two definitions of a banquet: namely, "a sumptuous entertainment of food and drink" and "a ceremonial or state feast followed by speeches." I suggest a variant, thus: "a sumptuous entertainment of food and drink ruined by speeches." These speeches! What anticipatory agonies for most of the speakers, what realised boredoms for the listeners! We all know their dreadful sequence. First there is the loyal toast. It is short and to the point. We like it for its own sake and because after it we can return to our tobacco. Then the guest of the evening rises to propose the toast of the particular medical institution or society whose banquet he is adorning. Usually he is some distinguished layman, and it is always interesting to the student of after-dinner oratory, that most neglected and abused of the arts, to watch the lay speaker facing up to a medical audience. First let us be frank and admit that no healthy minded layman can possibly like doctors as a class. They have the most unpleasant associations in his mind. These are laid down in infancy and become conditioned reflexes. There is an interesting—but somewhat distressing—experiment by which this may be demonstrated. If you go into a class-room in an infant school and utter the single word "doctor," more than half the children present will automatically thrust their faces forwards, open their mouths and protrude their tongues—not out of any motive of disrespect, but because they have endured the amenities of what is called "child welfare" and associate a doctor with a person who looks down their throats to see whether their tonsils are gone already, or still remain to be plucked.

Is it surprising, therefore, that the layman's impulse is to regard us all as at best but regrettable necessities? So conscious is our speaker of this unuttered—and unutterable—sentiment that he is instinctively moved to hide it by extremes of eulogy in characterising our activities. Fortunately for this desire there is yet another expression that pops up unbidden into his mind. He recalls having heard—and who has not heard it—that ours is a "noble profession," and he clings to this and makes it the keynote of his speech. This cue is all very well, but again he cannot forget that doctors are an odd lot, inclined to be oracular and authoritarian, and requiring to be placated. In the end his speech is a compromise and takes on the character of a bishop's address to a class

of catechumens awaiting confirmation in the front pews. He pats us on the back, speaks of the relief of suffering as our first preoccupation and only possible interest. Passes on to a quasi-humorous reference to the occasions—not rare indeed—when doctors differ, and proceeds to tell that hoary tale—told apparently to every invalid by every doctor some sixty years ago—of how he was given "six months to live" and yet look at him. We have to, and continue to hope that he is nearly finished, but like so many speakers he can't finish. He hasn't thought of a peroration and has talked out his text, but finally he sputters out like a dying firework and sits down. By this time the audience has grown somewhat restive. It's about half-past nine, and there begins a steady trickle of guests furtively creeping out between the tables for those mysterious visits that banqueters are so prone to. Within a few seconds there are many gaps in the ranks of the assembled sitters, the average age of those remaining has notably declined and so has the average blood pressure.

However, within a few minutes the absentees troop back, having taken a fresh lease of life, and the toastmaster announces the next speaker who is to return thanks. Although this speaker is a doctor and knows better, he has to pipe to the first speaker's tune, and is constrained therefore to confirm the high opinion of our profession to which the proposer of the toast gave such gracious utterance. He in his turn says what an eminent person, and how eloquent, the guest of the evening is, and sits down amidst perfunctory claps. So far humour has been absent from the proceedings—or not noticeably present—but now it is someone's turn to propose the health of the remaining guests en bloc. Human nature can stand no more pomposity so the next speaker is expected to be humorous. The press representatives who are present now gather up their notebooks and pencils and beat a retreat. Not only are they completely disillusioned about this banquet business, but they know that humour is taboo in press reports of dinners, and is generally frowned upon in English public life. No one trusts a humorist, though we may laugh with him, and to allow one's self to be a wag in public is to blight one's hope of a career anywhere but on the music hall stage. Still he who proposes the toast of the guests is expected to make this sacrifice, so someone of whom nothing much can be expected in future is picked upon for the task. I have, in fact, sometimes been asked to do it myself, so I speak with authority.

And now, as it seems that I am about to speak myself, the moment is opportune for some exposition of my views as to how after-dinner speeches should be composed and delivered. These can easily wait until next week.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Cost of Public Assistance

IN the House of Commons on Feb. 1, Mr. S. O. DAVIES moved: That, being of the opinion that the existing inequalities in the burden of public assistance, due to exceptional distress in some areas and comparative prosperity in others, constitute an anomaly calling for redress, the House would welcome a measure to spread the burden more equally over the whole country. It was now admitted even by the present Government, he said, that the block grant very largely failed to meet the legitimate needs and demands of the Special Areas. It was regrettable that the promise made by the Government during the passage of the Unemployment Act, 1934, that the state would assume complete financial responsibility for the able-bodied unemployed had not been carried out. The position was that public assistance committees, even in the most distressed areas, had been compelled to make a contribution under the Act to the Unemployment Assistance Board equal to three-fifths of the expenditure on the able-bodied unemployed. This provision had operated with extreme harshness on the areas with the highest degree of distress. The expenditure on public assistance should be equated all over the country, and the whole of public assistance should become a national charge.—Mr. LEONARD, in seconding the motion, said that apart from the very heavy burden cast upon the resources of local authorities in respect of those who were held to be outside the scope of the scheme of the Unemployment Assistance Board, even those who were within that scope were not being attended to as they should be by the Government. The local authorities still had to provide for medical requirements, and a medical certificate was even required to work the Unemployment Assistance Board's scheme. In Glasgow, for example, in one year they had to issue no fewer than 39,520 medical certificates for that purpose, and not a halfpenny came back to the local authority in recompense. The fact that poor people had not now to apply to a poor-law authority had reduced their reluctance to apply for relief, and the resulting increase in the number of applications had increased the burden on the finances of the local authorities, especially in the distressed areas.—Sir GIFFORD FOX said that the scheme suggested by Mr. Davies would revolutionise the system of local government. Money would be raised by one local authority and spent by another far away. This cut across the principle that there should be no taxation without representation. The proposal would encourage a large amount of "squandermania." The present block-grant system was based on the balance of need. It was revised every five years, and if local authorities found that the circumstances had changed in their areas they were able to make their case for the adjustment of the grant. The third quinquennial period started on April 1, 1937, and the national block-grant pool was increased from £43,922,000 to £46,172,000. The local authorities were also helped by the Unemployment Insurance Act, 1934, which relieved them of contributions in respect of certain classes of able-bodied unemployed costing £2,180,000. In addition, the 1937 Act provided for a revision of the method of distributing the block grant in favour of the poorer areas.

Mr. BERNAYS, Parliamentary Secretary to the Ministry of Health, said that it could not seriously be argued that the state should take over the costs of public assistance without also taking over the administration, and that would substantially diminish the powers of local authorities. Moreover, if the burden of public assistance was too great for some authorities to shoulder, it might well be argued that that was true also of other local services. Such a line of argument led in the end to a position in which local government would virtually disappear, which would undoubtedly be a major disaster. He could think of no social service which was so essentially a local service as public assistance. As to the suggested pooling of rates, such a system would endanger not only the autonomy of local authorities but also their efficiency in relieving distress. In cases where the greater part of the cost of relief would fall on another authority and not on the one incurring the expenditure the chief essential for prudent administration would be removed. The Government had gone far to meet the case by the recent alteration in the assessment of the block grant, which was designed to bring greater assistance to the hard-pressed areas.

Safety in Mines

In the House of Commons on Feb. 1 Mr. JAMES GRIFFITHS asked the Secretary for Mines if it was intended to introduce legislation during this session to deal with the report of the Royal Commission on safety in mines.—Captain CROOKSHANK replied that the government had given careful consideration to the report and the necessary preparations for a bill to implement its findings was being put in hand immediately. Such a measure would necessarily be long and complicated and could not be ready for introduction this session. He added that the report called attention to a number of improvements which it is possible for the industry to make on its own initiative, and he therefore invited all concerned to see how far such recommendations could be implemented in advance of any legislation.

Civil Medical Defence Services

In the House of Commons on Feb. 2, in answer to a question from Sir FRANCIS FREMANTLE, the MINISTER OF HEALTH said that plans had now been made for finding about 200,000 beds in existing hospitals and institutions in the first 24 hours of an emergency by sending patients home and transferring them to other accommodation and by putting additional beds and equipment in the wards. Another 100,000 could be found later by using ancillary parts of hospitals not at present used as wards. To enable these plans to be put into operation, considerable quantities of spare beds and bedding and other equipment had been obtained and were on order. Plans had also been drawn up for the grouping of the hospitals and the working arrangements which would operate between the individual hospitals in war-time. Progress was also being made with the creation of new hospital accommodation. The Ministry's hospital officers had noted buildings and land adjoining hospitals in their several regions which were suitable for expansion, and plans for new hospital units were under consideration. Local authorities were making good progress in securing the necessary transport for ambulance work. In London for instance, 1200 commercial vehicles had already been earmarked as ambulances and these were additional to the fleet of some 250 peace-time ambulances controlled by the county council and to the 300 Green Line coaches, provision for the immediate conversion of which had already been made. As regards personnel, the Minister said he was meeting a representative gathering of the medical profession on Feb. 15 in order to discuss a scheme for allocating doctors as far as possible to the most suitable kinds of work in the event of war, full use being made of the register compiled by the British Medical Association. The Central Emergency Committee for Nursing recently appointed had begun its work of registering and organising reserves of nurses and nursing auxiliaries.

Charitable Collections

On Feb. 3 in the House of Commons Mr. CRAVEN-ELLIS, in moving the second reading of the Charitable Collections (Regulation) Bill, said that the abuse of charity collections, which became very acute immediately following the war, had been dealt with so far as street collections were concerned by an Act of 1916. It was now desired that house-to-house collections should come under similar control and regulation. After the tightening up of the control of street collections many of those who had been abusing that method of collection turned their attention to house-to-house collection. During the last few years the number of collections from house-to-house had increased by from 400 to 500 per cent. The present Bill, which had the support of the great national charities, provided that parties promoting a charitable collection must apply to the police for a licence. Persons were prohibited from acting as collectors on behalf of a promoter who did not hold a licence, but with the authority of the police applicants might obtain a certificate entitling them to carry out purely local charitable collections without a licence. The Home Secretary would be empowered to give what was in effect an exemption to the great national charities from being called upon to apply for a licence. Every collector would have to have a prescribed badge and a certificate. Collecting in the name of charity had been the playground for a certain type of racketeer for too long.—Sir ADAM MAITLAND took the view that the recognised voluntary hospitals should have the same right of exemption as the national charities.—Mr. G. LLOYD, Under-Secretary, Home Office, said it was the intention of the Home Secretary to set up an advisory committee to advise him in regard to exemptions.

He thought that clause 3 of the Bill included hospitals. They did not want to interfere with legitimate collections.

Veterinary Education

Sir ARNOLD WILSON asked the Minister of Agriculture whether he had considered the very serious condition of veterinary education disclosed in the report of the Inter-Departmental Committee on Veterinary Education published last September, and whether the urgent need for increased financial aid from the Exchequer disclosed in the report would be met by making the necessary provision in his department's estimates for the forthcoming year. —Mr. W. S. MORRISON, Chancellor of the Duchy of Lancaster, replied that having regard to the far-reaching nature of the committee's recommendations it had been thought desirable to seek the views of the institutions and professional bodies likely to be affected, but the report would receive most careful consideration. In the meantime the maintenance grants were being increased in certain cases.

Rating Relief for Hospitals

On Feb. 3, in the House of Commons, Mr. H. G. WILLIAMS moved the second reading of the Voluntary Hospitals (Relief from Rating) Bill. He said that it was a little doubtful whether voluntary hospitals could properly be charged with rates, because the basis of valuation for rates was the rent which a willing tenant would give to a willing landlord, and he could not imagine anybody renting a hospital. On the other hand, since 1867, as a result of a judgment in another kind of case, voluntary hospitals had in fact been rated, except in one or two areas where the local authorities themselves had obtained powers not to rate them. He was merely proposing in this Bill that the example set by the city of Glasgow and a Yorkshire borough should be generally followed. The hon. Member was still speaking when at 4 o'clock the debate was automatically adjourned under the rules of the House.

In the House of Commons on Feb. 2 the Milk Industry Bill was withdrawn.

QUESTION TIME

THURSDAY, FEB. 2

The General Medical Council

Mr. GALLACHER asked the Minister of Health whether he would consider legislation for the supersession of the General Medical Council and its replacement by a new body possessing the same powers, but containing at least one-half of directly elected medical practitioners, and with an age-limit for its members of 65 years; and whether he would take the requisite steps to set up a committee representative of all interests to consider and report upon the necessary steps to be taken to this end.—Earl WINTERTON (Paymaster-General) replied: Certain representations with regard to the General Medical Council have recently been made and are at present under consideration, but I am not yet able to make any statement on the subject.

Protection of Water-supplies

Mr. GALLACHER asked the Minister of Health if any steps had yet been taken to ensure that men engaged on water-supplies were not germ carriers and to provide proper hygienic arrangements for all men engaged on such

work.—Mr. ELLIOT replied: A memorandum on this subject was issued to all water undertakers on Jan. 30.

Silicosis

Mr. ELLIS SMITH asked the Paymaster-General, as representing the Lord President of the Council, if the inquiry being made into questions that had arisen from silicosis, and being carried out by the Industrial Pulmonary Diseases Committee, included the pottery industry and any other industries.—Earl WINTERTON replied: Various investigations are being made under the direction of the industrial pulmonary diseases committee of the Medical Research Council in addition to the special inquiry into chronic pulmonary disease among coalminers. These include laboratory researches into the problem of silicosis generally. Inquiries have also been made regarding silicosis in particular occupations, including pottery work, stone cutting, and lead mining, and reports have been published.

In reply to a further question Earl WINTERTON said the urgency of the matter was fully realised and the work was being pressed forward with all possible speed.

Campaign against Rheumatism

Mr. DAVID ADAMS asked the Minister of Health whether, with a view to raising the health standards of the population, he had considered the necessity of instituting a national campaign against the widespread disease of rheumatism.—Mr. ELLIOT replied: In view of the activity of the Empire Rheumatism Council and other bodies, I am not satisfied that the present time is opportune for a campaign of the kind suggested.

MONDAY, FEB. 6

Attested Herds in Carmarthen

Mr. HOPKIN asked the Minister of Agriculture how many attested herds there were in the county of Carmarthen up to date; how many herds were waiting to be tested; what was the cause of the delay in testing; for what length of time was testing suspended; and was he satisfied that the number of veterinary staff was sufficient to cope with the farmers' demands for testing their herds.—Mr. RAMSBOTHAM replied: There are 1419 attested herds in the county of Carmarthen, 333 herds awaiting official test and 370 herds undergoing assisted tests. While in certain cases more than the minimum period of 60 days after the last assisted test carried out by the owner's veterinary surgeon may elapse before the official test is made, generally speaking there is no considerable delay nor has there been any suspension of this work. The veterinary staff in the county has recently been augmented, and my right hon. friend is satisfied that, subject to the occasional necessity for diverting certain of the veterinary inspectors to other duties of exceptional urgency for short periods, the staff engaged in the testing of herds is sufficient. The position is, however, being kept under constant review.

Drugs for Insured Persons

Mr. THORNE asked the Minister of Health whether panel doctors were expected, and permitted under the regulations, to supply any drug they wished to panel patients.—Mr. BERNAYS, parliamentary secretary to the Ministry of Health, replied: Insurance practitioners are required by their terms of service to order any drugs which are necessary for the adequate treatment of their patients.

Health Certificate for Naturalised Aliens?

Mr. HALL-CAINE asked the Home Secretary whether, in view of the increased number of persons now receiving British nationality, he would consider the desirability of making an additional condition that such nationality could only be granted if the applicant could provide a medical certificate to show that he was in reasonably good health and free from hereditary disease.—Mr. GEOFFREY LLOYD, under-secretary, Home Office, replied: No, Sir. My right hon. friend does not think he would be justified in imposing such a condition.

Reconditioning Centres

Sir RALPH GLYN asked the Minister of Labour how many men had taken advantage of the various reconditioning centres during the last 12 months; how many of these centres were in operation; and whether any new centres were to be opened in the special areas in order to enable young men on unemployment relief to fit themselves, if they so wished, to join the services after qualifying for the necessary medical and physical standards.—Mr. ERNEST BROWN replied: During the year ended Dec. 31 last 26,352 men were admitted to training at Ministry of Labour instructional centres, summer camps and local training centres. There were in operation 25 instructional centres, 10 camps during the summer, and 4 training centres. A fifth training centre has recently been opened. These centres are all situated in special areas. It is proposed to open a new local centre at Carfin in the Scottish special area. The object of all these centres is to help men, particularly men in the special areas and other areas of heavy unemployment, to fit themselves for employment.

Disabled Ex-Service Men

Sir ARNOLD WILSON asked the Minister of Labour how many ex-Service men were registered as wholly unemployed at the last convenient date; and how many of them in employment or unemployed were 50 per cent. or more disabled, or had lost a limb.—Mr. ERNEST BROWN replied: As regards ex-Service men generally, no figure is available since May 9, 1938, when the number recorded as wholly unemployed was 267,893. The number of disabled ex-Service men registered as wholly unemployed on the latest available date (Jan. 9, 1939) was 27,707. Statistics of percentage disability are not available, but of the 27,707 unemployed disabled men 12,183 were persons whose disability would prevent them from returning to their usual occupations but would not preclude them from employment under ordinary industrial or commercial conditions on what might be described as a light job, and 244 were persons whose disability rendered it difficult for them to be employed under ordinary industrial or commercial conditions except in some institution specially designed for men suffering from severe occupational disability.

TUESDAY, FEB. 7

Emergency Hospitals in War-time

Sir GIFFORD FOX asked the Secretary of State for War how many offers his department had received of buildings for emergency hospitals in time of war; how many of such premises had been inspected by his department; and what percentage of the offers, as a whole, had been definitely accepted and refused, respectively.—Mr. HORE-BELISHA replied: 131 offers of buildings for use as emergency hospitals in war have been received by the War Office, several of which seem likely to be suitable for army purposes. To date, two of these buildings have been inspected. None have been definitely accepted or refused, pending consultation with other interested departments. It will be borne in mind that we already have both Regular and Territorial military hospitals.

Hospital Services on Tyneside

Sir ARNOLD WILSON asked the Minister of Health whether he could make any further statement as to the action contemplated on the report of the Royal Commission on Local Government in the Tyneside Area, Cmd. 5402, 1937.—Mr. ELLIOT replied: I understand that discussions between the Northumberland county council and the Newcastle and Tynemouth county borough councils with regard to the coördination of hospital services are taking place. I do not think that any action can at present be usefully taken by my department.

Midwifery in Scotland

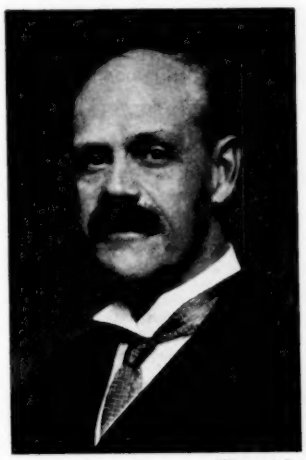
Mr. MATHERS asked the Secretary of State for Scotland the number of midwives employed under the 1937 Maternity Services Act directly by local authorities through voluntary organisations, and by arrangements with those in private practice, respectively; and for 1937 the percentage of births in Scotland attended by midwives, and the percentage in which medical assistance was required by the midwife.—Mr. COLVILLE replied: No midwives are as yet engaged in service under the Maternity Services (Scotland) Act, 1937. Of the total births notified in Scotland during 1937 the percentage attended by private midwives was approximately 24. Medical assistance was required by midwives in approximately 8 per cent. of the total births, equivalent to 33 per cent. of the births attended by midwives.

OBITUARY

JOSEPH LEWIN PAYNE

O.B.E., M.R.C.S., L.D.S.

Mr. Lewin Payne, consulting dental surgeon to Guy's Hospital, died suddenly on Jan. 31 at the age of 67. He was born in London, the son of William Payne of the Guildhall, and was educated at the City of London School and at Guy's Hospital. He took his L.D.S. in 1895 and qualified in medicine in 1899. After being lecturer in dental mechanics at the Guy's dental school and assistant dental surgeon, he became full dental surgeon at Guy's in 1904. He was a dentist of great ability and was keenly interested in the scientific aspects of dentistry. Many generations of students will remember his skill as a teacher and his fairness and kindliness as an examiner to the Royal College of Surgeons and the universities of Leeds and Birmingham. Lewin Payne was an active member of the British Dental Association and president of its metropolitan branch. He had also been president of the odontological section of the Royal Society of Medicine and of the British Society for the Study of Orthodontics. He was a sound pathologist and the monograph on odontomes which he wrote in 1914 with Douglas Gabell and Warwick James ranks with Bland-Sutton's classic work. Their classification has been accepted as the basis for all subsequent research on these elusive tumours. No-one ever heard Lewin Payne say an unkind word of others. He was a loyal friend and colleague and a man of simple and unaffected piety.



[*Elliott and Fry*

In 1900 Mr. Lewin Payne married Mary, the daughter of Charles Deny, and he leaves a widow and one son.

ROBERT COCHRANE BUIST

M.A. ST. AND., B.A. CAMB., M.D. EDIN., LL.D.

THE death of Dr. Buist of Dundee on Sunday last ends a life of unusual vigour and influence. As a veteran of 78 he was still young in mind and full of interests, and he did much besides the medical work in which he was engaged for fifty years.

A son of Thomas P. Buist, he was born in 1860 in the city where his life was mostly spent. From the High School he passed to St. Andrews University and from St. Andrews to Cambridge as a senior scholar of Corpus Christi. For his medical studies he went to Edinburgh, where he graduated in 1888; and here he not only maintained himself by teaching but founded the *Student*—which he carried on unaided for two years—and was junior president of the students' representative council. At the jubilee celebrations of 1934 Buist's services to the student life of Edinburgh were recognised by his being made LL.D., an honour which he had received from St. Andrews two years before.

After a short time in Vienna, where he concentrated on gynæcology and obstetrics, he started practice in Dundee, where in due course he joined the gynæcological staff of the Royal Infirmary, also lecturing on the subject in St. Andrews University. His local activities became very numerous: apart from strictly medical appointments he was at various times member of the health-insurance committee, chairman of the medical-benefit committee, president of the Dundee German Circle, a founder of the Dundee Symposium and of the Citizens' Association and chairman of directors of the Dundee Crematorium. But his range was also wider. He was a member of the Scottish committee of the British Medical Association from 1904 onwards, and was elected a vice-president of the association; he was formerly chairman of the Central Midwives Board for Scotland; and he served on the Royal Commission on Voluntary Hospitals and the Scottish Departmental Committee on Hospital Services.

A junior colleague at the Royal Infirmary writes: "In a sense, he still led us; his keen brain and penetrating thoughts were greatly valued at our staff meetings, which he seldom failed to attend, and at those happy meetings when the staff of Hospital and of the University College met socially. His wit, culture, and enterprise forced us to cast aside our cares and acquire from him some of his youth. Lately his professional work had mainly been carried out at Maryfield Hospital, where, until the last few months, he had been consulting obstetrician and gynæcologist. His activity was remarkable; he invariably walked to and from the hospital, a distance of two or three miles, when going to operate. His tall figure going briskly along the street made one realise that old age sometimes comes alone; here was a man old in years but young in spirit and physique." He seldom wore an overcoat, and had been a vegetarian—at first on humanitarian grounds, but later for reasons of health—since 1887. In early days he was a notable cross-country runner.

In his leisure hours Buist translated German poetry into the "Doric," and wrote much original verse both in English and Scots. Politically he inclined to the Left and he was president of the university Socialist group in Dundee and district. At the end of his life he was taking part in the movement for sending food and medical supplies to Spain and for the care of refugees.

Dr. Buist's wife, a daughter of William Mackenzie, of Carron, Strathspey, died a few years ago. His son is a major in the Royal Army Medical Corps, and his two daughters are married. His surviving brother, W. H. Buist, was formerly lord provost of Dundee.

THE LATE PROFESSOR WOOLLARD

Mr. J. B. Gurney-Smith writes: "As an old pupil of Prof. Woollard's at Bart's may I pay my tribute to him? In common with numerous other students, I stand and salute a great teacher, a great administrator, and a great personality. His anatomy department at Bart's was faultlessly run and all connected with it—demonstrators, students and the dissecting-room attendants—were alike inspired by the flame of professorial authority. The new Charterhouse department is his living memorial.

"His lectures were a delight both from the aspect of gaining knowledge and from the linguistic

aspect also. He had a wonderful command of English and his billowing and rhythmic cadence still lives in one's memory. Who was not impressed as he heard the recital of the wanderings of the vagus nerve, or the distribution of tracts in the cord? The relation of anatomy to medicine was apparent.

"His forceful personality made a deep impression. He was never one with whom to trifle or who suffered fools gladly, but the interests of his students he had much at heart and even if one had little intimate contact with him one felt he was interested just the same. His knowledge of literature and affairs was evident in his teaching and his philosophical asides were profound and pungent. Students have lost an inspiring leader and members of the profession an inspiring colleague."

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Dr. GILBERT RICHARDSON, who died in London on Feb. 6 at the age of 86, was born at Nelson, New Zealand, son of Ralph Richardson, J.P., D.L., of Greenfield Hall, Flint. He was educated at Marlborough, Adelaide, Downing College, Cambridge, St. George's Hospital and Trinity College, Dublin, taking his medical degree at Dublin in 1879, and the M.R.C.P. three years later. After resident appointments at the Metropolitan and Bethlem hospitals he settled in Putney where he remained in practice throughout his life. His active and inquiring mind led him in early years to contribute to medical journals on many subjects, among them infantile scurvy, the heredity of phthisis, the management of the third stage of labour, and the use of sulphonal as a hypnotic. Later he became president of the South-West London Medical Society and was on the council of the Irish Medical Schools and Graduates' Association. He was an advocate of the value of outdoor pursuits and made some mark himself at cricket, rowing and yacht racing. He married the second daughter of Lieut.-Colonel Hammond.

MEDICAL NEWS

University of Cambridge

On Feb. 3 the following degrees were conferred:—

M.B., B.Chir.—B. E. Miles, J. S. Phillpotts, H. St. C. C. Addis, and D. O. Walker.

Royal College of Physicians of London

The following lectures will be delivered at the college, Pall Mall East, S.W.1, on Tuesdays and Thursdays at 5 P.M.: on Feb. 23 and 28, Dr. Donald Stewart, industrial incapacity and modern medicine (Milroy lectures); on March 2, 7, and 9, Dr. H. P. Himsworth, diabetes mellitus (Goulstonian lectures); on March 14 and 16, Prof. W. W. D. Thomson, primary carcinoma of the lung (Lumleian lectures); on March 21 and 23, Prof. J. A. Gunn, the pharmacological actions and therapeutic uses of some compounds related to adrenaline (Oliver-Sharpey lectures); and Prof. J. A. Ryle, visceral neuroses (Croonian lectures). Members of the medical profession will be admitted on presentation of their card.

Scottish Conjoint Board

At recent examinations by the board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow the following candidates were successful:—

Frances A. M. Aldridge, M. H. Awwad, J. M. Bailey, H. J. Berger, Alexander Binnie, C. F. Campbell, F. J. Carter, Samuel Citron, J. C. Dick, Philip Dinner, Mostafa Farid, W. M. Fernando, Gavin Fleming, William Forsyth, W. E. Foy, Benjamin Gemcen, A. H. Germaine, Isaac Gottlieb, Michel Kolta, R. E. Lindsay, I. F. Logan, Chong-Leng Lo, C. E. Meade, N. A. Messih, C. E. Miller, R. D. Mishkin, D. C. Moir, C. S. P. Petris, Alexander Robertson, Arthur Rubin, David Salamon, C. A. Samuels, R. S. Sanderson, B. C. Sen, Emanuel Snell, L. J. Spitz, L. G. Starr, William Tannock, Dorando Valerio, and J. A. Watson-Joe.

The following graduates of recognised foreign universities were also admitted licentiates:—

Liesel Appel, Jancsi Brody, J. C. Hayward, Moritz Herzberg, Hermann Kaufmann, Fritz Lachs, and Geza Szanto.

Maternity and Child Welfare Conference

A national conference on maternity and child welfare will be held at B.M.A. house, Tavistock Square, London, W.C.1, from June 27 to 29, under the presidency of Mr. Walter Elliot. The general question underlying the discussions at the conference is to be the needs and problems of parenthood, and the following subjects are included on the programme: safety in childbirth for mother and child; the encouragement of breast-feeding; the nursery school, the nursery class, and the day nursery; the child in relation to the foster-mother and the daily minder; problems of parents with a physically defective child; propaganda in the maternity and child-welfare movement. A clinical course for medical practitioners will be held on June 25 and 26. Further information may be had from the secretary of the National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality, Carnegie House, 117, Piccadilly, W.1.

Society of Apothecaries of London

Dr. Evan Bedford will deliver the second Joseph Strickland Goodall lecture in the hall of this society, Water Lane, E.C.4, on Wednesday, March 29, at 9 P.M. He will speak on left ventricular failure. Members of the medical profession are invited to attend.

University of Liverpool

Dr. Leslie Cunningham has been appointed lecturer in clinical medicine in the university.

Gresham College

Dr. V. S. Hodson will give four lectures on physic at this college, Basinghall Street, London, E.C.2, from Feb. 14 to 17, at 6 P.M. His subject will be modern discoverers and their discoveries. Admission free.

Fellowship of Medicine Debate

On Friday, March 24, at 8.30 P.M., in the botanical theatre of University College, Gower Street, London, W.C.1, Mr. Somerville Hastings will move that the institution of a whole-time state medical service would be in the interests of the nation's health. The motion will be seconded by Dr. D. Stark Murray, and it will be opposed by Sir Henry Brackenbury and Dr. Frank Gray. Applications for tickets should be made to the fellowship, 1, Wimpole Street, W.1.

Congress on Brucella Infections

The federation of medical societies of North Africa are holding their annual congress at Oran on April 3, 4, and 5, under the presidency of Dr. Jasseron. Discussions will be held dealing with aspects of the problem of brucellar infections in North Africa. Further information may be had from the secretary-general of the congress, Dr. René Solal, 16, Boulevard Maréchal Joffre, Oran, Algeria.

Gifts to Hospitals

St. Mary's Hospital, London, has accepted a large house with 7 reception-rooms and 36 bedrooms and some 30 acres of garden at Nettlebed, which was offered to the hospital by the family of the late Mrs. Robert Fleming for use as a convalescent home for patients. Contributions for the maintenance of the house, including one of £1000 a year for seven years from Lord Nuffield, have been made, and the home will be ready to receive about 30 patients early in 1940.

The British Hospital for Mothers and Babies, Woolwich, has received an anonymous gift of £10,000 towards its building extension fund. A condition has been made that part of the money shall be used to found a ward for unmarried mothers.

The Birmingham United Hospital has received a gift of £5000 from Mr. Frank Barnes, consulting surgeon to the hospital. The money is to be used to dedicate a four-bedded ward at the new Centre Hospital in memory of his mother, brother and sisters.

Institute of British Surgical Technicians

On Friday, Feb. 17, at 8.15 P.M., at the Welbeck Hotel, Welbeck Street, London, W.1, Mr. T. Pomfret Kilner will deliver a lecture on plastic and reconstructive surgery. It will be illustrated by slides and a film. Members of the medical profession may obtain tickets from the secretary of the institute, 6, Holborn Viaduct, E.C.1.

Birth-rates in Soviet Russia

The Soviet newspaper *Prarda* states that in 1937 the birth-rate in the U.S.S.R. was 18–19 per cent. higher than in 1936. The increase of population in 1937 (according to provisional figures) was a little more than 2 per cent. During the first ten months of 1938 there were 100,000 more marriages in the Soviet Union than in the corresponding period of 1937. The number of divorces in 1937 had declined by 47 per cent. as compared with 1936.

Scottish Advisory Committee on Cancer

The Secretary of State for Scotland announces the appointment of a committee to review existing facilities for the diagnosis and treatment of cancer, to recommend developments, and to examine means of coöperation between local authorities. The chairman is Mr. W. J. Stuart, F.R.C.S.E., and the members Dr. G. B. Fleming, Mr. H. L. F. Fraser, Dr. A. S. M. Macgregor, Mr. David Robertson, and Mr. J. J. M. Shaw, F.R.C.S.E., with Mr. A. J. Purves, of the Department of Health for Scotland, as secretary.

British Postgraduate Medical School

On Feb. 8 Prof. E. C. Dodds gave the first of six weekly lectures on hormones in relation to medicine and pathology. Dr. S. Levy Simpson will give the first of another series of six weekly lectures on Feb. 14. He will speak on diseases of the endocrine glands. Both these series of lectures will be at 4.30 P.M. Mr. C. Price Thomas will give three lectures on empyema and abscess of the lung on Feb. 17, 24, and March 3, at 2.30 P.M., and Mr. Stanford Cade will lecture on radium on March 10, 17, and 24, at 2.30 P.M. Applications for tickets should be made to the dean of the school, Ducane Road, London, W.12.

A special course of lectures on the treatment of war wounds and air-raid casualties, which is primarily intended for surgeons, will be held at the school from March 6 to 24 at 5.30 P.M. The series will be introduced by Colonel J. M. Weddell, who will give a general survey of war injuries and medical arrangements. Other speakers will include: Colonel E. M. Cowell (who will discuss the general scheme for dealing with wounded, the prevention and treatment of shock, and preparation for transport), Dr. Janet Vaughan (blood transfusion), Mr. G. Gordon-Taylor (general principles in the treatment of wounds, the classification of cases, and wounds of the abdomen and genito-urinary system), Prof. G. E. Gask (wounds of the chest), Mr. St. J. D. Buxton (injuries of the lower limb), Mr. C. H. Frankau (injuries of the upper limb and joint injuries), Mr. P. H. Mitchiner (injuries to nerves and vessels), Mr. C. Max Page (amputations), and Mr. G. Jefferson (head injuries). Dr. A. E. Tudor Hart will also describe his recent experiences in the war in Spain, and a lecture on common infections of wounds is also included in the programme. Further information may be had from the dean.

Safeguarding of Water-supplies

A memorandum (No. 221) setting out the precautions necessary in the day-to-day administration of a water-supply has been sent by the Minister of Health to all water undertakings, including both local authorities and companies. Emphasis is laid on the need for care in the selection of workmen employed on any works where there is risk of conveying infection to the water; the clinical history of each workman, particularly with regard to enteric infection, should be thoroughly investigated, and every new workman employed where there is risk of contaminating the water should be examined to ascertain whether he is likely to be a typhoid carrier. Regular inspection of gathering-grounds and rivers is recommended, and the protection of bore-holes from pollution is discussed: inspections, if necessary, over an area of at least two miles of the site of the well, and particular attention to any cesspools or soakaways in the area, are advised. Where water is being supplied without treatment the undertakers should make frequent and regular analyses of the water. But the safeguarding of water-supply by special treatment such as chlorination likewise demands great care. "There is often a tendency," says the memorandum, "to think that, provided arrangements are made for chlorination, safety is secured whatever the condition of the raw water. It cannot be sufficiently stressed that a policy of reliance on a single line of defence between the consumer and a polluted source of water-supply is fraught with danger. Not only should every effort be made, as has been suggested above, to keep the source as free as possible from pollution, but wherever practicable the method of treatment should be such as to provide at least two lines of defence such as, for example, chlorination, or other effective form of sterilisation, after storage or filtration."

Medical Diary

Feb. 13 *to Feb.* 18

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1.

TUESDAY.

Therapeutics and Pharmacology. 5 P.M., Miss E. M. Widdowson: Hæmoglobin Levels and Iron Administration. Dr. W. W. Payne: Plasma Phosphates in Catarrhal Jaundice. Dr. Janet Vaughan and Dr. R. S. Saxton: Stored Blood for Transfusion.

Psychiatry. 8.30 P.M., Dr. Ian Skottowe: Shock Therapy: a Plea for Proportion in Psychiatry. Dr. J. Brander will also speak.

THURSDAY.

Dermatology. 5 P.M. (cases at 4 P.M.), Dr. H. MacCormac: (1) Schaumann's Disease, (2) Sarcoid followed by Lupus Erythematosus. Dr. B. W. Hunt: (3) Facial Hemiatrophy and Scleroderma. Dr. P. B. Mumford: Emulsifying Bases.

Neurology. 8.30 P.M., clinical meeting at the National Hospital, Queen Square, W.C.1.

FRIDAY.

Physical Medicine. 4.30 P.M., Dr. J. H. Kellgren: Sciatic Pain. Dr. C. W. Buckley will also speak.

Obstetrics and Gynæcology. 8 P.M., Mr. James Wyatt: Endometrioma of the Ovary. (2) Pseudohermaphroditism (3) Granulosa Cell Tumour in a Child. Dr. Moore White: (1) Granulosa Cell Tumour in a Girl. Mr. S. Gordon Luker: (1) Radium Treatment of Menopausal Hæmorrhage followed by Carcinoma of the Body of the Uterus Three Years Later. Mr. Leslie Williams: (1) Bilateral Myoma of Corpora Cavernosa.

Radiology. 8.30 P.M., Dr. Peter Kerley: Radiology of Acute Respiratory Diseases.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, 26, Portland Place, W.1.

THURSDAY.—8.15 P.M., Dr. C. Wilcocks: Tuberculosis in Natives of Tropical and Subtropical Regions. Dr. H. Harold Scott will also speak.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1.

MONDAY.—8.30 P.M., Sir Arthur Hurst and Dr. H. L. Glyn Hughes: Use and Abuse of Purgatives.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY.

WEDNESDAY.—9 P.M. (Royal Northern Hospital, Holloway Road, N.7.), surgical clinical evening.

PADDINGTON MEDICAL SOCIETY.

TUESDAY.—9 P.M. (Great Western Royal Hotel, Paddington, W.2), Dr. Charles Brook: Socialised Medical Services.

TUBERCULOSIS ASSOCIATION.

FRIDAY.—5.10 P.M. (26, Portland Place, W.1), general meeting. Mr. James Carver: Genito-urinary Tuberculosis. 8.10 P.M., Dr. Basil Roberts: Cadmium in the Treatment of Pulmonary Tuberculosis. Dr. Philip Ellman: Healing by Natural Resolution in Pulmonary Tuberculosis, with or without Cavitation. Mr. G. E. King Turner: The Teeth as "Indicators" in Pulmonary Tuberculosis. Mrs. White: Physical Treatment in Modern Thoracic Surgery.

BRITISH ASSOCIATION OF RADIOLOGISTS, 32, Welbeck Street, W.1.

FRIDAY.—3.30 P.M., Prof. P. Lamarque (Montpellier): (*a*) Diffuse Skeletal Metastasis in Cancer of the Breast; (*b*) Some Results of Historadiography. (Skinner lecture.)

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, W.1.

THURSDAY.—8 P.M., Mr. J. E. Roberts, Ph.D.: Protective Materials in the Use of Radium Surface Applicators. Mr. D. E. A. Jones: Method of Checking the Kilovoltage in X-ray Therapy. Mr. A. C. Gunstone: Control Table Design.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields.

TUESDAY.—4 P.M., Mr. Sampson Handley: Makers of John Hunter. (Hunterian oration.)

UNIVERSITY OF LONDON.
TUESDAY.—5 P.M. (University College, W.C.1.), Mr. R. J. Ludford, D.Sc.: Recent Advances in Normal and Malignant Cellular Growth. (First of three lectures.)
THURSDAY and FRIDAY.—5.30 P.M. (St. Bartholomew's Hospital, E.C.1), Prof. E. R. Flint: Pre- and Post-operative Management of Surgical Cases.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12.
TUESDAY.—4.30 P.M., Dr. S. Levy Simpson: Diseases of Endocrine Glands.
WEDNESDAY.—Noon, clinical and pathological conference (medical.) 2 P.M., Prof. J. H. Dible: Tissue Reactions in Histological Diagnosis. 3 P.M., clinical and pathological conference (surgical). 4.30 P.M., Prof. E. C. Dodds: Hormones in Relation to Medicine and Pathology.
THURSDAY.—2.15 P.M., Dr. Duncan White: radiological demonstration. 3.30 P.M., Dr. J. R. Minnitt: Analgesia and Anæsthesia in Obstetrics.
FRIDAY.—2 P.M., clinical and pathological conference (obstetrics and gynæcology). 2.30 P.M., Mr. C. Price Thomas: Empyema and Abscess of the Lung.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

ST. GEORGE'S HOSPITAL, S.W.1.
THURSDAY.—5 P.M., Dr. Anthony Feiling: neurological demonstration.

WESTMINSTER HOSPITAL, Horseferry Road, S.W.1.
TUESDAY.—5 P.M., Dr. Arnold Stott: Congestive Heart Failure. Mr. Rock Carling: Graves's Disease.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.
THURSDAY.—2 P.M., Dr. Robert Frew: Enuresis. 3 P.M., Dr. W. W. Payne: Examination of Renal Function.
Outpatient clinics daily at 10 A.M. and ward visits at 2 P.M.

NATIONAL HOSPITAL, Queen Square, W.C.1.
MONDAY.—3.30 P.M., Dr. Hinds Howell: Acute Myelitis.
TUESDAY.—3.30 P.M., Dr. Purdon Martin: Neurosyphilis (3).
WEDNESDAY.—3.30 P.M., Dr. F. M. R. Walshe: Clinical demonstration.
THURSDAY.—3.30 P.M., Mr. G. Jefferson: Head Injuries (1).
FRIDAY.—3.30 P.M., Dr. E. A. Carmichael: Deficiency Diseases (1).
Outpatient clinic daily at 2 P.M.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.3.
WEDNESDAY.—4 P.M., Dr. H. M. Oddy: Jaundice.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn Road, W.C.1.
FRIDAY.—4 P.M., Mr. Archer Ryland: demonstration of museum specimens.

TAVISTOCK CLINIC, Malet Place, W.C.1.
MONDAY.—4.30 P.M., Dr. H. V. Dicks: Sex Perversions.
THURSDAY.—4.30 P.M., Dr. T. W. Mitchell: Theory of the Neuroses.

ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, Ranelagh Road, S.W.1.
FRIDAY.—3.30 P.M., Dr. Albert Eidinow: Immunological Methods of Treatment in the Rheumatic Diseases.

LONDON SCHOOL OF DERMATOLOGY, 5 Lisle Street, W.C.2.
TUESDAY.—5 P.M., Dr. H. Corsi: Diseases of the Nails.
WEDNESDAY.—5 P.M., Dr. I. Muende: Histopathology of some Common Skin Diseases. (Chesterfield lectures.)

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.1.
MONDAY to SATURDAY.—MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1, Mon., Wed., and Fri., 5.15 P.M., primary F.R.C.S. physiology course.—ST. JOHN'S HOSPITAL, 5, Lisle Street, W.C.2, afternoon course in dermatology. (Open to non-members.)

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
WEDNESDAY.—4 P.M. (St. James' Hospital, Ouseley Road, S.W.12), Mr. Rainsford Mowlem: Modern Methods in the Treatment of Soft Tissue Injuries.

LEEDS GENERAL INFIRMARY.
TUESDAY.—3.30 P.M., Dr. J. T. Ingram: demonstration of dermatological cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY.—4.15 P.M. (Royal Hospital for Sick Children), Mr. Matthew White: Affections of the Hip Joint in Children.

Appointments

BELSEY, R. H. R., M.B. Lond., F.R.C.S., surgical registrar and tutor at St. Thomas's Hospital, London.
DIAMOND, DAVID, M.R.C.P., D.P.H., deputy medical officer of health for the city and port of Hull.
ELLIS, RONALD, M.D. Camb., M.R.C.P., hon. assistant physician to the Royal Liverpool United Hospital, the David Lewis Northern Hospital branch.
EWEN, J. H., M.R.C.P.E., D.P.M., medical superintendent at the Middlesex County Mental Hospital, Springfield; and psychiatrist to Westminster Hospital, London.
HAY, JANNETT C., M.D. Lpool, hon. physician to the Royal Liverpool Babies' Hospital.
LOUDEN, MARGARET C., M.B. Lond., F.R.C.S., surgical registrar at the South London Hospital for Women.
MALCOLM, J. E., M.B. St. And., casualty officer and surgical registrar at the King George Hospital, Ilford.
PEREIRA, ARTHUR, M.B. Lond., F.R.C.S., second aural surgeon to the Metropolitan Hospital, London.
TOWNSEND, ERIC, M.D. Edin., D.P.H., assistant medical officer of health for Bournemouth.
WOOLMER, R. F., B.M. Oxfd, D.A., hon. anæsthetist to the Woolwich and District War Memorial Hospital.

London County Council.—The following appointments are announced. A.M.O. (I) or (II) = assistant medical officer (class I) or (class II):—
GRANT, C. L., M.D. Edin., M.R.C.P.E., A.M.O. (I), Archway;
JONES, A. D. W., M.B. Lond., F.R.C.S., A.M.O. (I), St. Mary Abbots;
DUNKLEY, E. W., M.B. Lond., A.M.O. (II), St. George-in-the-East;
HARLAND, J. C., M.B. Lond., A.M.O. (II), Hackney;
POPE, DOROTHY S., M.B. Lond., A.M.O. (II), Lambeth;
STEVENSON, C. R., M.B. N.Z., A.M.O. (II), Colindale;
SMITH, D. W. G., M.B. Edin., M.R.C.P., Senior A.M.O. (II), Paddington;
SMALLWOOD, A. L., M.B. Lpool, D.C.H., D.P.H., A.M.O. (I), Colindale;
THOMPSON, N. J. W., M.B. Belf., A.M.O. (I), North-Eastern; and
GLENNIE, CECILY M., M.B. Aberd., D.C.H., A.M.O. (II), Bethnal Green.

Royal Sussex County Hospital, Brighton.—The following appointments are announced:—
PROWSE, C. BARRINGTON, M.B. Camb., M.R.C.P., hon. physician;
MCGREGOR, H. G., M.D. Lond., M.R.C.P., hon. assistant physician; and
BROOKE, RALPH, M.S. Lond., F.R.C.S., hon. orthopædic surgeon.

Examining Surgeon under the Factories Act, 1937: Dr. J. C. H. BIRD (Usk district, Monmouth).

Births, Marriages, and Deaths

BIRTHS

BUXTON.—On Jan. 31, the wife of Dr. K. L. Buxton, of Uganda—a son.
ELKINGTON.—On Feb. 6, at Malvern, the wife of Dr. Guy Elkington—a son.
FLACK.—On Feb. 8, 1939, to Isabel, wife of Dr. I. Harvey Flack—a son, Robert Harvey Graham.
GARNHAM.—On Feb. 1, at Kisuma, Kenya, the wife of Dr. P. C. C. Garnham—a daughter.
GREY.—On Jan. 31, the wife of Dr. J. C. P. Grey, Muar, Johore—a daughter.
HAVARD.—On Feb. 5, at Oxford, the wife of Dr. R. Emlyn Havard—a son.
HENDERSON.—On Feb. 2, at Atbara, Sudan, the wife of Dr. L. H. Henderson—a daughter.
HOPE SCOTT.—On Feb. 6, at Grosmont, near Hereford, the wife of Dr. Graham Hope Scott—a son.
MCNEIL.—On Feb. 6, at Allahabad, the wife of Capt. Charles McNeil, R.A.M.C.—a daughter.
MAURICE.—On Feb. 2, at Bude, the wife of Dr. Timothy Maurice—a daughter.
SIMON.—On Feb. 6, at Bentinck Street, W.1, the wife of Dr. George Simon—a son.
WATLING.—On Feb. 6, the wife of Dr. John Watling, of New Barnet—a son.

MARRIAGES

DAIN—HAGUE.—On Feb. 1, at Chudleigh, Devon, Harry Guy Dain, M.B., to Alice Muriel Hague.
ENRAGHT—BESEKE.—On Feb. 4, William Enraght, M.R.C.S., to Maud Beseke.

DEATHS

BRUCE.—On Jan. 23, at Vereeniging, Transvaal, S. Africa, Edna Winifred Bruce, M.B. Glasg.
BUIST.—On Feb. 5, at Dundee, Robert Cochrane Buist, M.D., LL.D. M.R.C.P.E., aged 81.
CUFF.—On Jan. 31, at Scarborough, Robert Cuff, M.B. Lond., aged 91.
DAUNT.—On Feb. 6, in London, Francis Eldon Horsford Daunt, L.R.C.P.I., L.R.C.S.E.
GAUNT.—On Feb. 1, at Alvechurch, John Penn Gaunt, M.R.C.S., aged 78.
MILEY.—On Feb. 3, at St. Mary Bourne, Hants, Miles Miley, M.B. Camb., aged 82.
PAYNE.—On Jan. 31, at Portland Place, W.1, Joseph Lewin Payne, O.B.E., M.R.C.S., L.D.S., aged 67.
RICHARDSON.—On Feb. 6, Gilbert Richardson, M.D. Dubl., M.R.C.P., of Elsworthy Terrace, N.W.3.
WALKER.—On Feb. 4, at Gillingham, Dorset, Arthur Walker, D.S.O., M.B. Camb., aged 60.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE Index and Title-page to Vol. II, 1938, which was completed with the issue of Dec. 31, is now ready. A copy will be sent gratis to subscribers on receipt of a postcard addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now.

Vacancies

For further information refer to the advertisement columns

Altrincham, Cheshire, St. Anne's Hosp.—**Res. surg. O., £200.**
Aylesbury, Royal Buckinghamshire Hosp.—**Sen. res. M.O., at rate of £200.**
Bedford County Hosp.—Second H.S., at rate of £150.
Belfast, Queen's University.—Tutor in obstetrics, £300.
Birmingham, Monyhull Colony.—**Res. asst. M.O., £350.**
Bradford, St. Luke's Municipal General Hosp.—Jun. obstetrician and gynæcologist, £300. Also H.P.'s and H.S.'s, each at rate of £150.
Brighton, Borough Infectious Disease Hosp. and Sanatorium.—Sen. res. M.O., £450.
Bristol Eye Hosp.—**Jun. H.S., at rate of £100.**
British Postgraduate Medical School, Ducane Road, W.12.—**Two cas. O.'s, each at rate of £150.**
Canterbury, Kent and Canterbury Hosp.—H.S. to spec. depts., at rate of £125.
Cardiff City Mental Hosp., Whitchurch.—H.P., at rate of £200.
Charing Cross Hosp., W.C.—Surg. reg., £150.
Chorley and District Hosp.—H.S., at rate of £150.
Colchester, Severalls Mental Hosp.—First asst. M.O., £875.
Connaught Hosp., E.—Hon. physician.
Dewsbury and District General Infirmary.—Second H.S., £150.
Dorchester, Dorset County Hosp.—**H.S., at rate of £150.**
Dover, Royal Victoria Hosp.—Second R.M.O., £140.
*Dreadnought Hosp., Greenwich, S.E.*10.—Physician with charge of outpatients. Also hon. dermatologist.
Dudley Guest Hosp.—Res. surg. O., £250–£300. Also H.S., £150.
Dundee Royal Infirmary.—Hon. asst. visiting obstet. and gynæcologist.
East Ham Memorial Hosp., Shrewsbury Road, E.7.—**H.P., at rate of £150.**
Edinburgh City and Royal Burgh.—Depute M.O.H., £900.
*Elizabeth Garrett Anderson Hosp., Euston Road, N.W.*1.—Hon. asst. to ear, nose, and throat dept.
Exeter, Wonford House.—**Asst. M.O., £350.**
Glasgow, Western Infirmary.—Asst. radiologist, £400.
Halifax County Borough.—Asst. M.O.H.—maternity and child welfare, £500.
*Hampstead Heath Babies Club, 99, Hampstead Way, N.W.*11.—Practitioner for clinic, 1½ guineas.
Haywards Heath, King Edward VII Memorial Eliot Hosp.—Hon. surgeon.
*Hosp. for Consumption and Diseases of the Chest, Brompton, S.W.*3.—Med. reg., £150.
*Hosp. for Sick Children, Great Ormond Street, W.C.*1.—**Res. med.** asst. and clin. pathologist, £125.
Hounslow Hosp., Middlesex.—Anæsthetist, £1 1s. per session.
Hove General Hosp.—Jun. res. M.O., £120.
Hull, Beverley Road Institution.—Asst. M.O., £350.
Hull City Mental Hosp., Willerby.—Second asst. M.O., £500.
Infants Hosp., Vincent Square, Westminster, S.W.—H.P., at rate of £100.
Isleworth, West Middlesex County Hosp.—Visiting ear, nose, and throat surgeon, 3 guineas per session.
Leeds University School of Medicine.—Reader in medicine, £600.
Leicester Royal Infirmary.—Two res. anæsthetists, each at rate of £150. Also H.P.'s., H.S.'s., and Cas. O.'s, each at rate of £125.
London County Council.—Asst. M.O.'s (class 1), each £350, asst M.O.'s (Class II), each £250. Also dental anæsthetist, £75.
*London Hosp., E.*1.—Asst. surgeon. Also first asst. to skin and light therapy dept., £150.
*London Jewish Hosp., Stepney Green, E.*1.—Hon. surg. reg., 60 guineas. Also clin. asst.
London University.—University chair of medicine at St. Mary's Hosp. medical school, £2000. Also University chair of dental surgery and pathology at Royal Dental Hosp., £1500.
Manchester, Ancoats Hosp.—Two H.S.'s (one conjoint), each at rate of £100.
Manchester, Duchess of York Hosp. for Babies.—Jun. res. M.O., at rate of £75.
Manchester Royal Infirmary.—Chief asst. to neuro-surgical Dept., £350.
Middlesbrough, Education Committee.—Asst. school M.O., £500.
Middlesex County Council.—Third asst. M.O. for Middlesex Colony, Shenley, £365.
*Miller General Hosp., Greenwich Road, S.E.*10.—H.P. and H.S. each at rate of £100.
Newport County Borough.—Asst. res. M.O., £350.
Northampton General Hosp.—Cas. O., H.S., and H.P., each at rate of £150.
Norwich, Norfolk and Norwich Hosp.—H.S., £120.
Nottingham City Council.—Temporary physician, £15 per week.
Oldham, Infectious Diseases Hosp.—Asst. M.O.H. and res. M.O., £350.
Oldham County Borough.—Asst. school M.O., £550.
Oldham Royal Infirmary.—H.P. and S. for special depts., at rate of £175.
Oxford University.—Graduate asst. in dept. of pathology at Radcliffe Infirmary, £251–£300.
Penshurst, Kent, Cassel Hosp. for Functional Nervous Disorders. **Locum tenens, 8 guineas a week.**
Plymouth, Prince of Wales's Hosp., Greenbank Road.—Res. anæsthetist and H.S. to spec. depts, at rate of £120. Also two H.S.'s, each at rate of £120.
Plymouth City.—Asst. M.O.H., £500.
Portsmouth City.—Part-time appointments.
Prince of Wales's General Hosp., N.15.—**Jun. H.P. and two jun. H.S.'s, each at rate of £90.**
*Queen Mary's Hosp. for the East End, Stratford, E.*15.—Res. M.O. and Cas. O., each at rate of £150, H.P. and H.S., each at rate of £110. Also obstet. H.S., at rate of £110.
Radium Institute and Mount Vernon Hosp., 1, *Riding House Street, W.*1.—H.S. for Northwood, at rate of £150.
Redhill County Hosp., Surrey.—Res. asst. M.O., at rate of £250.
Rochester, St. Bartholomew's Hosp.—H.S., at rate of £150.
Rotherham Hosp.—H.P., £180.
*Royal Army Medical Corps, Whitehall, S.W.*1.—Supplementary reserve of officers.
Royal College of Surgeons.—Member of the court of examiners.
Royal Masonic Hosp., Ravenscourt Park, W.6.—Two res. surg. O's, each at rate of £250.
Royal Naval Medical Service.—**M.O.'s.**
Royal Tunbridge Wells, Kent and Sussex Hosp.—H.P., £150.
St. Albans and Mid-Herts Hosp.—Hon. surgeon.
St. Helens County Borough.—**Asst. M.O.H., £500.**
St. Mary's Hosp. for Women and Children, Plaistow.—Hon. ophth. surgeon. Also hon. dermatologist for skin dept.
St. Marylebone Borough.—M.O.H., £1350.
Salford City.—M.O. for Newchurch Homes, Culcheth, £350.
Sheffield, Children's Hosp.—**Hon. ophth. surgeon. Also H.P., at rate of £100.**
Stoke-on-Trent City.—Sen. asst. maternity and child welfare officer, £600.
Surrey County Council.—Deputy med. supt., £720.
Swansea General and Eye Hosp.—H.P., at rate of £150.
Tancred's Studentships.—Each £100.
*Victoria Hosp. for Children, Tite Street, Chelsea, S.W.*3.—Surgeon to outpatients. Also hon. surg. reg.
Walsall General Hosp.—Res. surg. O., £300.
Warwick, King Edward VII Memorial Sanatorium, Hertford Hill.—First asst. M.O., £350. Also jun. asst. M.O., at rate of £250.
Woolwich and District War Memorial Hosp., Shooters Hill, S.E.18.—**Hon. asst. surgeon and hon. asst. obstet. surgeon. Also H.S., at rate of £100.**
Worcester County and City Mental Hosp., Powick.—Asst. M.O., £350.
York Dispensary.—Two res. M.O.'s, each £200.

The Chief Inspector of Factories announces vacancies for Examining Factory Surgeons at Bishop's Waltham (Southampton), Dunbarton (Dunbarton), West Drayton (Middlesex).

PARENTS AND THE COMMON FEVERS

WE have just received from Carnegie House, which is the home of voluntary work for mother and child, a copy of a booklet entitled "To Mothers and Fathers." This is the seventeenth edition and its 100,000 copies bring the total number published up to more than a million.[1] The book, we are told, lays no claim to deal with all the difficulties which may arise in the course of bringing up a young family, nor does it seek to replace the expert advice given by family doctor or welfare centre. It is just a useful guide for the parents of young children in all stations of life. The final chapter deals with infectious diseases and their dangers; and as this book is evidently getting through to its clientele in a remarkable manner it would be wise to bring this section into line with the best modern teaching. Some of it is good, but the quarantine table requires revision, especially the periods of exclusion from school. The note on measles is not quite accurate: its infectivity is bad enough without prolonging it for three weeks after the appearance of the rash or so long as there is any running from the ears; and it is a pity that nothing has been said about serum prophylaxis. On the other hand the infectivity of the catarrhal stage of whooping-cough is not stressed enough. The final paragraph on protective inoculation against diphtheria should be rewritten. But this criticism of detail does not diminish our appreciation of the very real service to the health of the community rendered by the book.

1. To Mothers and Fathers: how to keep yourselves and your children well and strong. Published by the National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality, 117, Piccadilly, London, W.1. Pp. 92. 6*d.*, post free.

MASKS AND NOSES.—Dr. John Mills writes: "I take it that the use of masks by surgeons while operating is to prevent the breath, and with the breath organisms, from reaching the operation site. I have noticed, however, that many surgeons wear the masks with the nose protruding over the top. As the mouth is usually closed, and breathing, both in and out, is almost always carried on through the nose, I fail to see how an operating mask can be useful if the nose is not properly covered."

NOTES, COMMENTS, AND ABSTRACTS

CRIMINAL ABORTION

A SUGGESTION FOR LESSENING ITS INCIDENCE

BY JOAN MALLESON, M.B. Lond.

IT is well known that deliberate abortion causes a vast amount of maternal ill health. Although the immediate death-rate from the practice is small (some 13 per cent. of the total maternal mortality), among its sequelæ must be included many cases of permanent sterility as well as subsequent obstetrical complications, which often pass unrecognised as symptoms of previous interference. This toll of maternal health is so highly detrimental to the individual and to the nation that any and every method of prophylaxis should be worth considering.

For obvious reasons it is the working-class mother, particularly the most ill-nourished, exhausted, and sick, who most readily resorts to criminal abortion and who takes the gravest risks to achieve it. It is her health—already impaired—which is most often sacrificed. It is mainly with her predicament that this article deals; for, paradoxically, where therapeutic abortion is most clearly indicated it is least readily obtained. Women of the upper and middle classes are generally not allowed to continue a pregnancy which endangers life or subsequent health; but the working-class mother—on whose health the well-being of the whole family depends—is often compelled to run such risks, since for her investigation and relief are seldom accessible. There is little doubt that certain pregnancies which should legitimately be dealt with by therapeutic abortion are, on account of inadequate assistance, often terminated by the woman herself and in a manner calculated to produce yet greater physical disorder.

Public health figures for 1937 show that in England nearly 20 per cent. and in Scotland nearly 30 per cent. of the total maternal deaths were due to causes which were "aggravated by childbearing." These deaths were due mainly to chronic respiratory, renal and cardiac disorders. One cannot help wondering whether (in the unfortunate absence of contraceptive instruction) the wider application of therapeutic abortion would not have protected some of these mothers. Further, even when death has not been caused, a vast increase of morbidity must result from repeated parturition among these sick mothers. Statistics show that a large percentage of these labours have been fruitless, for the infant-death rate among such cases is extremely high.

It is not always easy to predict events early in pregnancy, but it is known that the dangers of childbirth in the normal, as well as in the sick woman are liable to be increased by malnutrition, exhaustion and multiparity. Yet these factors are, indeed, the very ones which most frequently drive a woman to criminal abortion! Unfortunately, for this most needy section of the populace there is the least opportunity for obtaining expert opinion; nor indeed, as matters stand, is there much likelihood of getting pregnancy diagnosed until after the time that any indicated curettage could be favourably performed. Clearly this state of affairs is lamentable.

Investigations suggest that there must be some 90,000 women in this country annually who resort to criminal abortion. This is good enough reason, therefore, to consider facilities which might transfer some of these desperate mothers from the hands of the criminal abortionist into proper medical care. Similar measures might help others, by virtue of early diagnosis and sympathetic advice, to be dissuaded from seeking to terminate pregnancy at all.

Before outlining any possible measures, it would be well to review the present position. In working-class—particularly rural—practice it is exceptional for a pregnancy to be diagnosed by the family doctor until after the third month. Most women know that a request for early diagnosis is seldom favoured. No practitioner is anxious to hazard what can in many cases be no more than a guess; nor is the practice of bimanual examination readily undertaken by most practitioners. Apart from frequent reluctance of both patient and doctor, the time taken for disrobing, the towels, provision of gloves, all go to make for its avoidance. Since most women know also that abortion must be performed in the earliest weeks of pregnancy, it follows that countless women undergo the dangers of abortion where no pregnancy exists and without having received any medical opinion whatsoever. The beliefs which still exist that menstruation can be "forced" by odd medicaments, together with other fallacies of ignorance and superstition, flourish because the practitioner is excluded from this side of family life. A knowledge of the physical dangers of abortion, as well as of the prophylaxis of contraception, has no opportunity for ventilation. Many people believe that they must avoid asking help in illness subsequent to abortion, lest the family doctor should disclose the case and bring disgrace or the law upon them. Hence a distraught mother seeks the local abortionist—often a kindly woman and often (so she feels) her only helpful friend. Experience shows that such actions are commonly undertaken from the highest motives—desire to maintain the standard of food and space for the already existing family, as well as to spare the suffering of the expected child for whom there is no adequate provision. Yet it happens that, with the invalidism or death of these mothers, the family disintegrates completely; around their health and capacity to tend the children the whole home revolves; and therefore, viewed socially, these mothers are the very last who should be permitted to jeopardise their well-being.

For the help and protection of such mothers the following facility could be made—a provision based upon a public-health service which has recently been introduced throughout Denmark. Occasional clinics could be held in each district, to be known as "mothers' welfare centres." The officer in charge would not need to be of consultant standing but should have experience in antenatal work and should be provided with facilities for obtaining Aschheim-Zondek tests. He—or she—should be in touch with local consulting centres, where cases which might require therapeutic abortion could be referred. In addition, the officer might possess special experience in contraceptive work, in which event the clinic could take over or introduce such contraceptive work as is now permitted under the Ministry of Health circular 1622 of 1937—which service is still only provided by 245 of the 414 local health authorities. (Failure to give contraceptive advice "to those married women for whom further pregnancy would be detrimental to health" must be directly responsible for a high morbidity- and abortion-rate. The omission reflects most regrettably upon these authorities.)

The clinics would be open to women of some agreed income-level. To them could be referred the following cases :—

(1) Patients for early diagnosis of pregnancy, either for the assistance of the practitioner with differential diagnosis or at the request of the woman herself.

Many institutions can now provide Aschheim-Zondek tests for 4*s.* 6*d.*, and patients would expect to pay part or all of this fee. How much better for maternal health that women should know that they can spend 4*s.* 6*d.* to discover whether or not they are pregnant, than that they should resort to expensive abortifacients whenever a menstrual period is late! The reassurance which a negative Aschheim-Zondek gives to women in certain circumstances is inestimable. The menopausal woman, for example, during the period of what has been termed "the seven years' war," is often the most desperate in her fear of pregnancy, a fear which, in itself, can be detrimental to her state of health and stability.

The officer in charge would have good opportunity for making contact with a woman who appeared anxious about being pregnant, would discuss with her the reason for her anxiety, and bring to her notice the dangers of inducing a "miscarriage." Officers at the contraceptive clinics find frequently that it is possible to dissuade women from abortion by holding out the assurance that they can later be taught reliable contraceptive methods. Since the dangers of criminal abortion could here be freely advertised and discussed, the work of the clinic would have high educational as well as prophylactic value.

(2) Patients would be referred for consideration as to the advisability of therapeutic abortion. They would be those who had themselves approached the family doctor for "help," or whom the practitioner regarded as "borderline" cases because of their present state of health or the history of their previous confinements. In every case the function of the officer would be purely diagnostic and administrative. Having diagnosed pregnancy, he would assess the various relevant clinical factors, if necessary obtaining reports of past confinements from all practitioners concerned. On such evidence he would decide upon the validity of the patient's claim and then refer her for expert opinion. His position would enable him to call upon local consultants for cardiac, renal, and pulmonary disorders, while he would be fully informed of the available accommodation in local hospitals.

It is only by a central organisation such as this that a non-paying patient is likely to obtain the necessary investigations before the tenth week of pregnancy. In many cases tests, such as for renal efficiency, will take time, and often more than one opinion will be sought. The presence of a "middle man"—an officer known to be responsible for ensuring this service—should be invaluable to the interests of these patients; and—as is so rarely the case—this public-health service is one which would be in no way prejudicial to the interests of the private practitioner. Very few practitioners care to be involved in a case of therapeutic abortion, for it is common experience how frequently misrepresentation is likely to occur. Still fewer are anxious to make the endless arrangements necessary before the merits or demerits of such a case are settled. Yet most would be glad to be spared the necessity for "showing the door" to an anxious unhappy woman and would welcome the opportunity to refer such cases to a clinic ready and able to deal with them.

The establishment of such clinics should offer no great difficulty or expense. Local antenatal premises would naturally be used and since patients could be expected to travel some distance for this service, one officer giving a weekly or fortnightly session should be able to cover very large areas.[1]

The educational advantages of such clinics would probably spread rapidly among working-class women. The same women have benefited so greatly by the infant-welfare clinics that it is now rare to find a mother with no knowledge of modern principles. One might hope that money spent on this service would be repaid by a lessening of the services dealing with septic abortion and gynæcological disorders; indirectly also the service might raise and not lower the birth-rate, and particularly the survival-rate, of both mother and child.

Although by such means individual women would be deterred from embarking on the hazards of criminal abortion, the task of lessening the urge towards this practice rests with the economists, the politicians, and society as a whole. No palliative can easily be found for persuading an elderly multipara with a grown-up family to go through with an unwanted pregnancy, nor yet can any simple method be devised for solving the problem which faces the pregnant mother of a hungry and overcrowded family. In circumstances such as these the practitioner's part is the somewhat minor one of seeking to protect the health, in its truest sense, of the pregnant woman under his care; and, disinclined as he may be to consider her social status in relation to her pregnancy, he cannot with honesty play his part if he ignores those environmental factors which determine her chances of subsequent life and health. A public-health service which would assist the practitioner in this task and help him in the making of a decision which may be complex and onerous, should surely be welcome.

THE BARE MINIMUM

EVEN in Europe there are today circumstances in which the shortage of foodstuffs may necessitate emergency measures against famine. The technical commiftee on nutrition of the League of Nations Health Organisation has thought it advisable to suggest means of supplying a bare minimum that will support life. In the *Bulletin* of the organisation (1938, **7**, 666) the committee propose a basis which can be modified according to local circumstances. The diets put forward in the following schedule, while extremely simple and inexpensive, are nevertheless not grossly inadequate from the physiological standpoint.

The *first scheme* is arranged on the basis that a sufficient supply of dry skimmed-milk powder is available. The daily ration is as follows :—

Growing children		*Adults*	
Whole wheat	5 parts	Whole wheat	12 parts
Skimmed-milk powder	1 part	Skimmed-milk powder	1 part
Cod-liver oil	5 g. daily	Cod-liver oil	2 g. daily
Salt (sodium chloride)	5 g. „	Salt	8 g. „

These relative proportions of wheat to skimmed-milk powder are to be maintained, although the amounts given will depend on the supplies available. To provide a diet of 2000 calories for an adult would require about 500 g. of wheat and about 45 g. of skimmed-milk powder.

1. In Denmark, in addition to duties somewhat similar to the above, such clinics are expected to give "warrantable instruction to men or women in any matter relating to sexual hygiene." They must give advice on questions of heredity and must explain the procedure necessary for obtaining such abortion as is now legal in cases of rape or incest or when the woman is mentally deficient. They must also advise any unmarried woman about the claims that should be made upon the father of her child. In short, all matters relating to the protection of maternal health and interests can be rendered through such local centres.

The *second scheme* is suitable when the supply of skimmed-milk powder must be limited to young children :—

Growing children		*Adults*	
Whole wheat	8 parts	Whole wheat alone	
Skimmed-milk powder	1 part	Brewers' dried yeast	10 g. daily
Brewers' dried yeast	5 to 10 g. daily	Cod-liver oil	2 g. „
Cod-liver oil	2 to 5 g. „	Salt mixture	10 g. „
Salt mixture*	5 g. daily		

* Containing 4 parts sodium chloride to 1 part calcium carbonate.

In the children's diet the proportion of wheat to skimmed milk to be maintained, the amounts given to depend on the supplies available.

1. *Provision of antiscorbutic vitamin.*—The above diets provide no antiscorbutic vitamin ; this essential principle must be obtained from local supplies : from citrus fruits (oranges, lemons), if available, from potatoes, cabbage, or other vegetables, even from sprouted grains or infusions of non-poisonous green leaves. Half an orange or lemon twice weekly will supply the requisite amount of antiscorbutic principle.

2. *Infants.*—Infants under six months of age should be fed on whole milk if possible (reconstituted from dried or condensed milk when necessary) plus a small daily ration of 2 to 5 g. of cod-liver oil. If necessary, skimmed-milk powder may be substituted. The daily ration of antiscorbutic material is also essential for the young infant ; 5 g. (or 1 teaspoonful) of fresh fruit juice (preferably orange or lemon) is a suitable daily dose.

3. *Fat.*—The above diets contain no significant amount of fat. It is desirable to add fat in such quantities as are available.

4. *Meat, dried legumes, and cereals*, other than wheat, if available, can be substituted in the above diets for an equivalent amount of wheat.

5. *Supplements of cocoa and sugar*, though not essential, are desirable, particularly in the case of children, as greatly increasing the palatability of such monotonous diets as the above.

MALARIA AND MOSQUITOES

ADDRESSING the Royal Society of Arts on Feb. 7 Sir Malcolm Watson recalled Ronald Ross's address to the same society nearly forty years earlier when he advocated malaria prevention by mosquito control. Sir Malcolm reviewed the movements to combat malaria during each of the four decades since 1900, including the foundation of the Ross Institute in 1926, and outlined some of the achievements of anti-malarial work. The adoption of Ross's method of mosquito reduction was retarded in India (and elsewhere) by negative antilarval work in 1902–03 at Mian Mir (as Ross described it " conducted on unpractical and unscientific lines ") but it was slowly established in other countries, the most consistently prominent being Malaya. Some results of anti-malarial ingenuity during this period were that the construction of the Panama Canal and the Singapore naval base was rendered possible, Port Swettenham was not closed in 1901, many lives were saved in Malaya, Ceylon, India, Europe, Africa, and America, and the cost of production of rubber, tea, gold, and copper was reduced. On a Malayan rubber estate malaria cases decreased from 6000 in 1914 to 6 in 1924 ; one Indian tea estate in 1935 showed a decrease in hospital admissions of 92 per cent. on the 10,378 cases in 1929 (28,659 cases of other diseases were reduced by 44 per cent.), and on another estate during 1927–33 sick-days and costs respectively were reduced by 107,619 (from 219,306) and £6000 (from £13,600).

The Malayan Government began antimalarial work in two towns in 1901, persistently extending it : Ross regarded it in 1926 " as the greatest sanitary achievement ever accomplished in the British Empire." Research was started in 1900, a volume (chiefly by G. F. Leicester) being published in 1908 on the mosquitoes of Malaya. Ross himself had realised the importance of species and habits and had recognised culex and anopheles under other names. Watson showed in his researches on species sanitation in 1910 that in low-lying land at or below sea level *A. umbrosus* was controllable by open drainage which was without effect on malaria amongst hills, the latter being due to a mosquito which lived in the clear running water of drains and hillside ravines. Many species of anopheles were affected by small environmental changes and many dangerous-looking swamps, including most rice fields, were harmless.

During the decade 1900–10 further experiment in the rural Kapar district of Malaya in 1904 and experience in Italy (although here the sick- and death-rate were reduced) showed that quinine was not a true preventive of malaria—a fact confirmed nearly 30 years later by the League of Nations). In Egypt however Ross in 1902 and Andrew Balfour in 1904 by means of drainage rid Ismailia and Khartoum respectively of malaria, while by oiling streams (later more permanently by cement drains) Gorgas and Le Prince controlled malaria in Panama.

In 1909 the discovery in Malaya of *A. maculatus* living in running water explained why swamp-free places might be intensely malarial : a malarial advisory board was created, and by this time the rubber planters realised the economic value of malaria prevention. A campaign was begun in 1911 by Watson and Middleton against malaria in Singapore (later by Given in 1923). In 1913 Swellengrebel and Schuffner began their work, particularly on species sanitation, in the Dutch East Indies and later in Europe ; the Rockefeller Foundation undertook research in South America with preliminary studies (1917–19) of the value of mosquito-proofing, quinine, oiling and drainage, work which confirmed experience in Malaya. During 1920–30 control work was extended throughout Malaya, and by Scharff in Penang : the average death-rate for many thousands of labourers constructing the Chenderoh dam during 3½ years in a highly malarious district was only 4·96 per 1000. In 1923 the League of Nations malaria commission was created : in India after a preliminary survey by the lecturer Ramsay began successful work on some Assam tea estates in 1924. The Rockefeller Foundation extended its work successfully in the U.S.A. (1920–25), where in 1924 Darling introduced species sanitation. In 1925 Italy abandoned the quinine policy, pursued for a quarter of a century, practical work being begun in Port Torres in Sardinia after field studies by Missiroli and Hackett. In Africa except for French work on mosquito control quinine held the field.

From 1930 onwards malaria was now (in Sir Malcolm's words) " on the run " in Malaya. The Roman campagna had been reclaimed by drainage and arsenical destruction of mosquitoes. The researches of Swellengrebel et al. showed that not all the six races of *A. maculipennis* were carriers. Sir Malcolm described the work of the Ross Institute, referring to the pioneer work on the copper mines in Northern Rhodesia by Simpson et al. in 1929 (within three years the death-rate of Europeans was reduced to less than a quarter) and to the successful control at the Lower Zambesi bridge by Harrison in 1931. Mosquito control throughout Africa had been greatly stimulated by these successes and by the malaria-control courses for laymen : in 1938 there was a record attendance of 186, and the average for the past four years had been over 120.

The Ross Institute was incorporated in the London School of Hygiene and Tropical Medicine in 1933.

KYMOGRAPHY OF THE HEART : CORRIGENDUM.—On p. 252 of our last issue Dr. Franklin Wood described the case of a man with left ventricular aneurysm. At the 13th line of this case-record the reader is rightly referred to one of two kymograms reproduced on a special plate ; but unfortunately he is asked to look at the wrong one—fig. V instead of fig. X. We hope this mistake on our part may have been recognised as such.